State of Utah

GARY R. HERBERT
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Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF WATER QUALITY
Walter L. Baker, P.E.
Director

EVV 5-16-2013

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MAY 1 4 2013

CERTIFIED MAIL
(Return Receipt requested)

David Parrish, Mayor
Ephraim City
5 South Main
Ephraim, Utah 84627

Document Date 5/15/2013
DWQ-2013-003425

Dear Mayor Parrish:

Subject: Permit Issuance for UPDES Permit No. UT0025984, Ephraim City Wastewater Lagoons

Enclosed is a signed copy of the Utah Pollutant Discharge Elimination System (UPDES) Renewal Permit No. UT0025984, for the above referenced facility. The conditions and requirements of the renewal permit are effective as of July 1, 2013, as scheduled, subject to the right to challenge this decision in accordance with the provisions of *Utah Administrative Code*, Section R317-9.

Discharge Monitoring Reports (DMR) forms (EPA form 3320-1) for reporting and self-monitoring requirements as specified in the permit are available upon request, however EPA's NetDMR process for on line DMR submittal is now available. As a reminder, DMR forms are due to be completed on line or in our office by the 28th of each month following each monthly monitoring period. To sign up for NetDMR, please visit our website at http://www.waterquality.utah.gov/UPDES/NetDMR.htm.

A fee schedule was included in the Utah Department of Environmental Quality budget appropriation request of the Legislature and in accordance with *Utah Code Annotated 19-1-201*. The fee schedule, as approved by the Legislature, includes a prescribed fee for Publicly Owned Treatment Works. The prescribed annual fee for UPDES Small Publicly Owned Treatment Works with a flow of 1.94 MGD is $1,000.00. Please be advised that, upon issuance of this permit, you will be billed for this amount.

In an effort to improve the State UPDES permitting process, we are asking for your input. Please take a few minutes to comment on the quality of service you received by completing the "Give Feedback to DWQ" form link on DWQ's webpage at www.waterquality.utah.gov. Thank you for assisting us in improving our service to you.

The Utah Division of Water Quality (DWQ) values your feedback, and as the State agency charged with the administration of issuing UPDES permits, we are continuously looking for ways to improve our quality of service to you. DWQ Director Walter L. Baker is committed to continually assessing and improving the level and quality of services provided to you.

If you have any questions with regards to this matter, please contact Dan Griffin of this office at (801) 536-4387 or by e-mail at dgriffin@utah.gov.

Sincerely,

John Kennington, P.E., Manager
UPDES Engineering Section

JK:DG:mc

Enclosures: (5)
1. Permit (DWQ-2012-003895),
2. FSSOB (DWQ-2012-003894),
3. WLA for San Pitch (DWQ-2013-001600),
4. ADR (DWQ-2012-003899)
5. Industrial Pretreatment Wastewater Survey

cc: Amy Clark, EPA Region VIII (w/ encls)
Philip Bondurant, Central Utah Public Health (w/o encls)
John Chartier, Central District DEQ District Engineer (w/o encls)
Chad Parry, Ephraim Public Works Director (w/ encls)
Regan H. Bolli, Ephraim City Manager (w/ encls)

DWQ-2012-003897

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FACT SHEET STATEMENT OF BASIS
CITY OF EPHRAIM
NEW PERMIT: DISCHARGE
UPDES PERMIT NUMBER: UT0025984
MINOR MUNICIPAL

FACILITY CONTACTS

Person Name:	Chad Parry
Position:	Public Works director
Phone Number:	435-283-4631
Facility Name:	Ephraim City
Mailing and Facility Address:	5 South Main Ephraim City, Utah 84627
Telephone:	435-283-4631

DESCRIPTION OF FACILITY

The Ephraim City treatment facility (Ephraim) consists of a seven (7) cell lagoon system located west of Ephraim and east of the San Pitch River which is the receiving stream during discharge periods. During non-discharge periods the facility will land apply effluent to fields adjacent to the lagoons. The land application activity will be addressed under different authority than the UPDES program. Ephraim manages isolated fields adjacent to the lagoons for land application of effluent for disposal. Ephraim plans to install a chlorine disinfection system at the outfall to properly disinfect the effluent before discharge. The lagoon system is located near 39°22'32.3" north latitude and 111°37'48.2" west longitude.

DISCHARGE

The Ephraim Lagoons are currently operated as total containment lagoons, but as a result of growth in the area and at Snow College the facility can no longer guarantee total containment during colder and/or wetter years. Ephraim will discharge to a segment of the San Pitch River that is 303(d) listed as impaired for total dissolved solids (TDS). A TMDL was completed and approved for the San Pitch River on November 18th 2003. The TMDL requirements apply during the critical season from March through September. As a result, Ephraim can be granted permission to discharge to the San Pitch during the non-critical season.

An anti-degradation review and facility plan completed for the facility indicates that the most feasible and economical alternative choice for Ephraim is a facility that land applies from March through November and allows a discharge to the San Pitch from December through February. Ephraim has been working towards finalizing all the facility changes required to allow for the land application activities, and preparing for future discharges.

DESCRIPTION OF DISCHARGE

Ephraim has not had a need for a discharge permit in the past. Consequently, there is no previous discharge monitoring data available. They are expected to achieve the discharge limits for this permit.

Outfall	Description of Discharge Point
001	Located at latitude 39°22'32.3" and longitude 111°37'48.2" through the lagoon overflow pipe and disinfection system to a ditch, then travels one mile to empty into the San Pitch River.

RECEIVING WATERS AND STREAM CLASSIFICATION

The final discharge from the lagoons is through the lagoon overflow pipe and disinfection system to an unnamed ditch that flows around the lagoons and travels a mile to flow into the San Pitch River. The San Pitch River is classified 2B, 3C, 3D and 4 at this location according to *Utah Administrative Code (UAC) R317-2-13.*

Class 2B -Protected for secondary contact recreation such as boating, wading, or similar uses.

Class 3C -Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain

Class 3D -Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain

Class 4 -Protected for agricultural uses including irrigation of crops and stock watering.

BASIS FOR EFFLUENT LIMITATIONS

Limitations on total suspended solids (TSS), biochemical oxygen demand (BOD_5), E-Coli, pH and percent removal for BOD_5 and TSS are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2.* The TDS limits are based on the water quality standard for the receiving stream. The Dissolved Oxygen based on the Waste Load Allocation (WLA). The oil and grease is based on best professional judgment (BPJ).

PERMIT LIMITATIONS:

Parameter	Effluent Limitations			
	Monthly Average	Weekly Average	Minimum	Maximum
Flow, MGD				
Dec. 1-Feb. 28	NA	NA	NA	1.94
Mar. 1 – Nov. 30	NA	NA	NA	0
BOD_5, mg/L	25	35	NA	NA
BOD_5 Min. % Removal	85	NA	NA	NA
TSS, mg/L	25	35	NA	NA
TSS Min. % Removal	85	NA	NA	NA
E-coli	126	157	NA	NA
DO, mg/L	NA	NA	5.0	NA
TRC, mg/L	0.116	NA	NA	0.219
TDS, mg/L	NA	NA	NA	1200
Oil & Grease, mg/L	NA	NA	NA	10
pH, Standard Units	NA	NA	6.5	9.0

NA – Not Applicable.

SELF-MONITORING AND REPORTING REQUIREMENTS

The following are the self-monitoring requirements for this new permit. The permit will require reports to be submitted monthly and quarterly, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period.

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Flow *b, *c	Continuous	Recorder	MGD
BOD_5, Influent	2 X Weekly	Grab	mg/L
Effluent	2 X Weekly	Grab	mg/L
TSS, Influent	2 X Weekly	Grab	mg/L
Effluent	2 X Weekly	Grab	mg/L
E-Coli, No./100mL	2 X Weekly	Grab	No./100mL
Total Dissolved Solids, mg/L	Monthly	Grab	mg/l
Dissolved Oxygen, mg/L	2 X Weekly	Grab	mg/l
Ammonia, mg/L	Monthly	Grab	mg/l
pH	2 X Weekly	Grab	SU
TRC*d	Daily	Grab	mg/L
Oil & Grease	Monthly	Grab	mg/L
Metals *e	Yearly	Grab/Composite	mg/L
Total Toxic Organics	1st, 3rd, and 5th Year of the Permit Cycle	Grab	mg/l

Metals Monitoring *e			
Parameter	Sample Type	Frequency	Units
Total Arsenic	Composite	Yearly	mg/L
Total Cadmium			
Total Chromium			
Total Copper			
Total Cyanide			
Total Lead			
Total Mercury	Composite/Grab		
Total Molybdenum	Composite		
Total Nickel			
Total Selenium			
Total Silver			
Total Zinc			

*a See Definitions, *Part VIII*, of Permit for definition of terms.

*b Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

*c If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

*d Only sample when disinfection is being used

*e Metals are sampled on a frequency that is less than a facility of this size would normally be required. Due to the seasonal nature of the discharge the frequency is reduced. If the seasonal nature is discontinued, and they are allowed to discharge year round, the frequency will be adjusted to reflect the change.

Land Application Requirements

Land application activities for Ephraim will require monitoring of the effluent that is going to be applied to the land. Application will be conducted in accordance with this permit and General Permit for Land Disposal of Municipal Wastewater UTOP002. The monitoring requirements are listed in the table below.

Routine Monitoring Requirements		
Parameters	Measurement Frequency	Sample Type
Flow, (GPD)	Weekly	Continuous
E-Coli.	Monthly	Grab
Total Inorganic Nitrogen (NH_4+NH_3+NO_2+NO_3)	Monthly	Grab
Irrigated Acreage	Monthly	Estimated

BIOSOLIDS (SEWAGE SLUDGE)

The State of Utah has adopted the *40 CFR 503* federal regulations for the disposal of sewage sludge (biosolids) by reference. However, since this facility is a lagoon, there is not any regular sludge production. Therefore, *40 CFR 503* does not apply at this time. In the future, if the sludge needs to be removed from the lagoons and is disposed in some way, the Division of Water Quality must be contacted prior to the removal of the sludge to ensure that all applicable state and federal regulations are met.

STORM WATER

STORMWATER REQUIREMENTS
Wastewater treatment facilities, which includes treatment lagoons, are required to comply with storm water permit requirements if they meet one or both of the following criteria,

1 The facility has an approved pretreatment program as described in 40 CFR Part 403.
2. The facility has a design flow of 1.0 MGD or greater.

The Ephraim facility fits one of these criteria for exclusion from a UPDES Storm Water Permit by a No Exposure Certification. The facility only recently became required to submit a No Exposure Certification. They have submitted a No Exposure Certification for coverage during this permit cycle and have met all requirements. Therefore, no storm water permitting requirements will be required at this time.

PRETREATMENT REQUIREMENTS

Ephraim City has not been designated for pretreatment program development because it does not meet conditions which necessitate a full program. The flow through the plant is less than five (5) MGD, there are no categorical industries discharging to the treatment facility, industrial discharges comprise less than 1 percent of the flow through the treatment facility, and there is no indication of pass through or interference with the operation of the treatment facility such as upsets or violations of the POTW's UPDES permit limits.

Although Ephraim City does not have to develop a State-approved pretreatment program, any wastewater

discharges to the sanitary sewer are subject to Federal, State and local regulations. Pursuant to *Section 307* of the *Clean Water Act*, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in *40 CFR 403* and the State Pretreatment Requirements found in *UAC R317-8-8*.

An industrial waste survey (IWS) is required of the permittee as stated in Part II of the permit. The IWS is to assess the needs of the permittee regarding pretreatment assistance. The IWS is required to be submitted within sixty (60) days after the issuance of the permit. If an Industrial User begins to discharge or an existing Industrial User changes their discharge, the permittee must resubmit an IWS no later than sixty days following the introduction or change as stated in Part II of the permit.

It is recommended that the permittee perform an annual evaluation of the need to revise or develop technically based local limits for pollutants of concern, to implement the general and specific prohibitions *40 CFR, Part 403.5(a)* and *Part 403.5(b)*. This evaluation may indicate that present local limits are sufficiently protective, need to be revised or should be developed. It is required that the permittee submit for review any local limits that are developed to the Division of Water Quality. If local limits are developed they must be public noticed.

BIOMONITORING REQUIREMENTS

As part of a nationwide effort to control toxic discharges, biomonitoring requirements are being included in permits for facilities where effluent toxicity is an existing or potential concern. In Utah, this is done in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (Biomonitoring)*. Authority to require effluent biomonitoring is provided in *Permit Conditions, UAC R317-8-4.2*, *Permit Provisions, UAC R317-8-5.3* and *Water Quality Standards, UAC R317-2-5 and R317-2-7.2*.

The reasonable potential analysis for this facility in regards to toxicity is not deemed sufficient to require biomonitoring or whole effluent toxicity (WET) limits because there are no present or anticipated industrial dischargers on the system nor are there any anticipated for the duration of this permit. The waste discharge is anticipated to be household waste only. Therefore, WET limits and testing are not required in this permit; however the permit will contain a WET reopener provision.

PERMIT DURATION

It is recommended that this permit be effective for a duration of five (5) years.

Drafted by
Daniel Griffin, Discharge
Michael George, Storm Water
Jennifer Robinson, Pretreatment
Utah Division of Water Quality

ADDENDUM TO FSSOB

A public notice for the draft permit was published in The Sanpete Messenger on March 11, 2013. The comment period ended on April 11, 2013.

Responsiveness Summary

On March 25, 2013 Doug Sakaguchi (CUP Project Manager, DWR) requested more information on the project and was emailed a copy of the Permit Packet. On April 8, 2013 he replied that they had no comments on the project.

On April 8, 2013 Jay Olsen (Environmental Stewardship Coordinator, DAG) contacted the permit writer to ask about the project and the discharge of effluent containing total dissolved solids to the San Pitch River. The majority of the concern expressed by Jay Olsen was for the downstream TDS concentration and the possibility of the downstream segments violating the site specific TDS standard being violated as a result of the effluent. Specifically he was requesting that the discharge limit for the effluent be set as no greater than the TDS in the San Pitch River.

The permit writer explained the reasoning behind the development of the WLA and the factors taken into consideration in its development. The discharge is only being allowed during the unimpaired seasons to prevent further degradation. The discharge is being even further restricted to periods of time when the stream flows are high enough to support the discharge. During this time frame the in-stream concentration used in the WLA is 940 mg/L, with a standard of 1200 mg/L. The limit from the WLA for the discharge is calculated to be 1245 mg/L, but is being set at 1200 mg/L (the standard) to prevent impairment.

Furthermore it was explained to Mr. Olsen that the results from the sampling done during the emergency discharges in February 2012 showed the in-stream concentration was at 740 mg/L and the effluent was at 570 mg/L. Since there has never been a discharge from the lagoons, this should be the highest concentration of TDS for discharge. It was determined by Water Quality that with an effluent limit of 1200 mg/L there is not a reasonable potential for the effluent to contribute to a violation of the site specific standard downstream of the Gunnison Reservoir.

The permit Record was forwarded to Jay Olsen on April 8 to assist in his review of the permit. There has not been any further contact by Jay Olsen regarding the permit, and no written comments have been received. This phone conversation is being categorized as an informal comment since no formal comments or questions were submitted in writing. In addition Water Quality made a determination after developing a WLA for the discharge that the limit for TDS would be protective of the designated uses of downstream water bodies and no result in a violation of downstream water quality standards for TDS.

During finalization of the Permit certain dates, spelling edits and minor language corrections were completed. Due to the nature of these changes they were not considered Major and the permit is not required to be re Public Noticed. The language corrections were to replace Executive Secretary with Director and to clarify certain language regarding the General Permit for Land Disposal of Municipal Wastewater and the initiation of coverage during this permit.

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APPENDIX G

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis
SUMMARY

Discharging Facility: **Ephraim City Lagoons**
UPDES No: UT-None
Current Flow: 1.94 MGD Design Flow
Design Flow 1.94 MGD

Receiving Water: **Ditch => San Pitch**
Stream Classification: 2B, 3C, 3D, 4
Stream Flows [cfs]:

31.6 Winter (Dec-Mar) 20th Percentile Fall & Winter

Stream TDS Values:
929.0 Winter (Dec-Mar) Fall and Winter Average

Effluent Limits:			**WQ Standard:**	
Flow, MGD:	1.94	MGD	Design Flow	
BOD, mg/l:	25.0	Winter	5.0	Indicator
Dissolved Oxygen, mg/l	5.0	Winter	5.0	30 Day Average
TNH3, Chronic, mg/l:	21.5	Winter	Varies	Function of pH and Temperature
TDS, mg/l:	1245.1	Winter	1200.0	

Modeling Parameters:
Acute River Width: 50.0%
Chronic River Width: 100.0%

Level II Review required.

Date: 10/1/2012

Permit Writer: _____ 5/9/13
WLA by: _____ 10/1/12
WQM Sec. Approval: _____
TMDL Sec. Approval: _____ 5/9/13

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis

1-Oct-12
4:00 PM

Facilities: **Ephraim City Lagoons** **UPDES No: UT-None**
Discharging to: **Ditch => San Pitch**

I. Introduction

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary in-stream parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), un-ionized ammonia (as a function of pH and temperature, measured and evaluated interms of total ammonia), and dissolved oxygen.

Mathematical water quality modeling is employed to determine stream quality response to point source discharges. Models aid in the effort of anticipating stream quality at future effluent flows at critical environmental conditions (e.g., low stream flow, high temperature, high pH, etc).

The numeric criteria in this wasteload analysis may always be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

II. Receiving Water and Stream Classification

Ditch => San Pitch:	2B, 3C, 3D, 4
Antidegradation Review:	Level I review completed. Level II review required.

III. Numeric Stream Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.00 mg/l (30 Day Average) N/A mg/l (7Day Average) 3.00 mg/l (1 Day Average
Maximum Total Dissolved Solids	1200.0 mg/l

Acute and Chronic Heavy Metals (Dissolved)

Parameter	4 Day Average (Chronic) Standard Concentration	Load*	1 Hour Average (Acute) Standard Concentration		Load*
Aluminum	87.00 ug/l**	1.410 lbs/day	750.00	ug/l	12.156 lbs/day
Arsenic	190.00 ug/l	3.079 lbs/day	340.00	ug/l	5.511 lbs/day
Cadmium	1.05 ug/l	0.017 lbs/day	13.64	ug/l	0.221 lbs/day
Chromium III	384.18 ug/l	6.227 lbs/day	8037.81	ug/l	130.275 lbs/day
ChromiumVI	11.00 ug/l	0.178 lbs/day	16.00	ug/l	0.259 lbs/day
Copper	44.37 ug/l	0.719 lbs/day	78.14	ug/l	1.266 lbs/day
Iron			1000.00	ug/l	16.208 lbs/day
Lead	32.48 ug/l	0.526 lbs/day	833.48	ug/l	13.509 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.039 lbs/day
Nickel	244.28 ug/l	3.959 lbs/day	2197.17	ug/l	35.611 lbs/day
Selenium	4.60 ug/l	0.075 lbs/day	20.00	ug/l	0.324 lbs/day
Silver	N/A ug/l	N/A lbs/day	87.35	ug/l	1.416 lbs/day
Zinc	562.44 ug/l	9.116 lbs/day	562.44	ug/l	9.116 lbs/day

* Allowed below discharge

**Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO3

Metals Standards Based upon a Hardness of 620.29 mg/l as CaCO3

Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard Concentration	Load*	1 Hour Average (Acute) Standard Concentration		Load*
Aldrin			1.500	ug/l	0.024 lbs/day
Chlordane	0.004 ug/l	0.081 lbs/day	1.200	ug/l	0.019 lbs/day
DDT, DDE	0.001 ug/l	0.019 lbs/day	0.550	ug/l	0.009 lbs/day
Dieldrin	0.002 ug/l	0.036 lbs/day	1.250	ug/l	0.020 lbs/day
Endosulfan	0.056 ug/l	1.057 lbs/day	0.110	ug/l	0.002 lbs/day
Endrin	0.002 ug/l	0.043 lbs/day	0.090	ug/l	0.001 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.072 lbs/day	0.260	ug/l	0.004 lbs/day
Lindane	0.080 ug/l	1.510 lbs/day	1.000	ug/l	0.016 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.001 lbs/day
PCB's	0.014 ug/l	0.264 lbs/day	2.000	ug/l	0.032 lbs/day
Pentachlorophenol	13.00 ug/l	245.328 lbs/day	20.000	ug/l	0.324 lbs/day
Toxephene	0.0002 ug/l	0.004 lbs/day	0.7300	ug/l	0.012 lbs/day

IV. Numeric Stream Standards for Protection of Agriculture

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.08 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	9.72 tons/day

V. Numeric Stream Standards for Protection of Human Health (Class 1C Waters)

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
Metals	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day
Chlorophenoxy Herbicides				
2,4-D			ug/l	lbs/day
2,4,5-TP			ug/l	lbs/day
Endrin			ug/l	lbs/day
ocyclohexane (Lindane)			ug/l	lbs/day
Methoxychlor			ug/l	lbs/day
Toxaphene			ug/l	lbs/day

VI. Numeric Stream Standards the Protection of Human Health from Water & Fish Consumption [Toxics]

	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Toxic Organics	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	50.95 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	14.72 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.01 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	1.34 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.08 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	396.30 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	1.87 lbs/day

1,1,1-Trichloroethane					
Hexachloroethane	ug/l	lbs/day	8.9	ug/l	0.17 lbs/day
1,1-Dichloroethane					
1,1,2-Trichloroethane	ug/l	lbs/day	42.0	ug/l	0.79 lbs/day
1,1,2,2-Tetrachloroethan	ug/l	lbs/day	11.0	ug/l	0.21 lbs/day
Chloroethane			0.0	ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4	ug/l	0.03 lbs/day
2-Chloroethyl vinyl ethe	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0	ug/l	81.15 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5	ug/l	0.12 lbs/day
p-Chloro-m-cresol			0.0	ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0	ug/l	8.87 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0	ug/l	7.55 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0	ug/l	320.81 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0	ug/l	49.07 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0	ug/l	49.07 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1	ug/l	0.00 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2	ug/l	0.06 lbs/day
1,2-trans-Dichloroethyle	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0	ug/l	14.91 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0	ug/l	0.74 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0	ug/l	32.08 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0	ug/l	43.40 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1	ug/l	0.17 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5	ug/l	0.01 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0	ug/l	547.27 lbs/day
Fluoranthene	ug/l	lbs/day	370.0	ug/l	6.98 lbs/day
4-Chlorophenyl phenyl ether					
4-Bromophenyl phenyl ether					
Bis(2-chloroisopropyl) e	ug/l	lbs/day	170000.0	ug/l	3208.13 lbs/day
Bis(2-chloroethoxy) met	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Methylene chloride (HM	ug/l	lbs/day	1600.0	ug/l	30.19 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0	ug/l	6.79 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0	ug/l	0.42 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0	ug/l	0.64 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0	ug/l	0.94 lbs/day
Hexachlorocyclopentadi	ug/l	lbs/day	17000.0	ug/l	320.81 lbs/day
Isophorone	ug/l	lbs/day	600.0	ug/l	11.32 lbs/day
Naphthalene					
Nitrobenzene	ug/l	lbs/day	1900.0	ug/l	35.86 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0	ug/l	264.20 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0	ug/l	14.44 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1	ug/l	0.15 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0	ug/l	0.30 lbs/day
N-Nitrosodi-n-propylami	ug/l	lbs/day	1.4	ug/l	0.03 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2	ug/l	0.15 lbs/day

Phenol	ug/l	lbs/day	4.6E+06	ug/l	8.68E+04 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9	ug/l	0.11 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0	ug/l	98.13 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0	ug/l	226.46 lbs/day
Di-n-octyl phthlate					
Diethyl phthalate	ug/l	lbs/day	120000.0	ug/l	2264.56 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06	ug/l	5.47E+04 lbs/day
Benzo(a)anthracene (P	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Benzo(b)fluoranthene (	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Benzo(k)fluoranthene (P	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Acenaphthylene (PAH)					
Anthracene (PAH)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0	ug/l	207.58 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9	ug/l	0.17 lbs/day
Toluene	ug/l	lbs/day	200000	ug/l	3774.27 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0	ug/l	1.53 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0	ug/l	9.91 lbs/day
					lbs/day
Pesticides					lbs/day
Aldrin	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2.0	ug/l	0.04 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0	ug/l	0.04 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0	ug/l	0.04 lbs/day
Endrin	ug/l	lbs/day	0.8	ug/l	0.02 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8	ug/l	0.02 lbs/day
Heptachlor	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Heptachlor epoxide					
PCB's					
PCB 1242 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1254 (Arochlor 125	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1221 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1232 (Arochlor 123	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1248 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1260 (Arochlor 126	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1016 (Arochlor 10	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Pesticide					
Toxaphene	ug/l		0.0	ug/l	0.00 lbs/day
Dioxin					
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day			

Metals				
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	81.15 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	4151.70 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	86.81 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.12 lbs/day
Zinc				

There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.

VII. Mathematical Modeling of Stream Quality

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8

(4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

Coefficients used in the model were based, in part, upon the following references:

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

VIII. Modeling Information

The required information for the model may include the following information for both the upstream conditions at low flow and the effluent conditions:

Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

Other Conditions

In addition to the upstream and effluent conditions, the models require a variety of physical and biological coefficients and other technical information. In the process of actually establishing the permit limits for an effluent, values are used based upon the available data, model calibration, literature values, site visits and best professional judgement.

Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

Current Upstream Information

	Stream Critical Low Flow cfs	Temp. Deg. C	pH	T-NH3 mg/l as N	BOD5 mg/l	DO mg/l	TRC mg/l	TDS mg/l
Summer (Irrig. Season)	0.50	21.5	8.3	0.00	0.00	6.45	0.00	1299.0
Fall	0.70	6.8	8.2	0.07	0.00	---	0.00	983.0
Winter	31.60	3.0	8.3	0.10	0.10	---	0.00	929.0
Spring	2.90	17.2	8.3	0.10	0.00	---	0.00	1338.0

Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*

Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l	
All Seasons	0.0000	0.53*	1.06*	0.1*	0.053*	10.0	* 1/2 MDL

Projected Discharge Information

Season	Flow, MGD	Temp.
Winter (Dec-Mar)	1.94000	4.0

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

IX. Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort coincide with the environmental conditions expected at low stream flows.

Effluent Limitation for Flow based upon Water Quality Standards

In-stream criteria of downstream segments will be met with an effluent flow maximum value as follows:

Season	Daily Average	
Winter	1.940 MGD	3.001 cfs

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of MGD. If the discharger is allowed to have a flow greater than MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occuring, the permit writers must include the discharge flow limititation as indicated above; or, include loading effluent limits in the permit.

Effluent Limitation for Whole Effluent Toxicity (WET) based upon WET Policy

Effluent Toxicity will not occur in downstream segements if the values below are met.

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	85.7% Effluent	[Chronic]

Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD limitation as follows:

Season	Concentration	
Summer	25.0 mg/l as BOD5	0.0 lbs/day
Fall	25.0 mg/l as BOD5	0.0 lbs/day
Winter	25.0 mg/l as BOD5	0.0 lbs/day
Spring	25.0 mg/l as BOD5	0.0 lbs/day

Effluent Limitation for Dissolved Oxygen (DO) based upon Water Quality Standards

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent D.O. limitation as follows:

Season	**Concentration**
Winter	5.00

Effluent Limitation for Total Ammonia based upon Water Quality Standards

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

Season		**Concentration**		**Load**	
Winter (Dec-Mar)	4 Day Avg. - Chronic	15.2	mg/l as N	246.0	lbs/day
	1 Hour Avg. - Acute	39.9	mg/l as N	645.1	lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

Effluent Limitation for Total Residual Chlorine based upon Water Quality Standards

In-stream criteria of downstream segments for Total Residual Chlorine will be met with an effluent limitation as follows:

Season		Concentration		Load	
Winter (Dec - Mar)	4 Day Avg. - Chronic	0.116	mg/l	1.88	lbs/day
	1 Hour Avg. - Acute	0.219	mg/l	3.54	lbs/day

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration		Load	
Winter (Dec - Mar)	Maximum, Acute	1245.1	mg/l	10.07	tons/day
Colorado Salinity Forum Limits		Determined by Permitting Section			

Effluent Limitations for Total Recoverable Metals based upon Water Quality Standards

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 620.29 mg/l):

	4 Day Average Concentration		Load	1 Hour Average Concentration		Load
Aluminum*	N/A		N/A	874.6	ug/l	14.2 lbs/day
Arsenic*	221.52	ug/l	2.3 lbs/day	396.5	ug/l	6.4 lbs/day
Cadmium	1.21	ug/l	0.0 lbs/day	15.9	ug/l	0.3 lbs/day
Chromium III	448.05	ug/l	4.7 lbs/day	9,376.8	ug/l	152.0 lbs/day
Chromium VI*	12.17	ug/l	0.1 lbs/day	18.0	ug/l	0.3 lbs/day
Copper	51.63	ug/l	0.5 lbs/day	91.0	ug/l	1.5 lbs/day
Iron*	N/A		N/A	1,166.4	ug/l	18.9 lbs/day
Lead	37.76	ug/l	0.4 lbs/day	972.2	ug/l	15.8 lbs/day
Mercury*	0.01	ug/l	0.0 lbs/day	2.8	ug/l	0.0 lbs/day
Nickel	284.85	ug/l	3.0 lbs/day	2,563.1	ug/l	41.5 lbs/day
Selenium*	5.10	ug/l	0.1 lbs/day	23.1	ug/l	0.4 lbs/day
Silver	N/A	ug/l	N/A lbs/day	101.9	ug/l	1.7 lbs/day
Zinc	656.13	ug/l	6.9 lbs/day	656.1	ug/l	10.6 lbs/day
Cyanide*	6.07	ug/l	0.1 lbs/day	25.7	ug/l	0.4 lbs/day

*Limits for these metals are based on the dissolved standard.

Effluent Limitations for Heat/Temperature based upon Water Quality Standards

Summer	23.8 Deg. C.	74.9 Deg. F
Fall	9.3 Deg. C.	48.7 Deg. F
Winter	26.1 Deg. C.	78.9 Deg. F
Spring	21.1 Deg. C.	70.0 Deg. F

Effluent Limitations for Organics [Pesticides] Based upon Water Quality Standards

In-stream criteria of downstream segments for Organics [Pesticides] will be met with an effluent limit as follows:

	4 Day Average Concentration	Load	1 Hour Average Concentration		Load
Aldrin			1.5E+00	ug/l	3.76E-02 lbs/day
Chlordane	4.30E-03 ug/l	6.96E-02 lbs/day	1.2E+00	ug/l	3.01E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	1.62E-02 lbs/day	5.5E-01	ug/l	1.38E-02 lbs/day
Dieldrin	1.90E-03 ug/l	3.07E-02 lbs/day	1.3E+00	ug/l	3.13E-02 lbs/day
Endosulfan	5.60E-02 ug/l	9.06E-01 lbs/day	1.1E-01	ug/l	2.76E-03 lbs/day
Endrin	2.30E-03 ug/l	3.72E-02 lbs/day	9.0E-02	ug/l	2.26E-03 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	2.51E-04 lbs/day
Heptachlor	3.80E-03 ug/l	6.15E-02 lbs/day	2.6E-01	ug/l	6.52E-03 lbs/day
Lindane	8.00E-02 ug/l	1.29E+00 lbs/day	1.0E+00	ug/l	2.51E-02 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	7.52E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	2.51E-04 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	1.00E-03 lbs/day
PCB's	1.40E-02 ug/l	2.26E-01 lbs/day	2.0E+00	ug/l	5.01E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	2.10E+02 lbs/day	2.0E+01	ug/l	5.01E-01 lbs/day
Toxephene	2.00E-04 ug/l	3.24E-03 lbs/day	7.3E-01	ug/l	1.83E-02 lbs/day

Effluent Targets for Pollution Indicators
Based upon Water Quality Standards

In-stream criteria of downstream segments for Pollution Indicators will be met with an effluent limit as follows:

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	81.0 lbs/day
Nitrates as N	4.0 mg/l	64.8 lbs/day
Total Phosphorus as P	0.05 mg/l	0.8 lbs/day
Total Suspended Solids	90.0 mg/l	1458.7 lbs/day

Note: Pollution indicator targets are for information purposes only.

Effluent Limitations for Protection of Human Health [Toxics Rule]
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

	Maximum Concentration	
	Concentration	Load
Toxic Organics		
Acenaphthene	3.15E+03 ug/l	0.00E+00 lbs/day
Acrolein	9.10E+02 ug/l	0.00E+00 lbs/day
Acrylonitrile	7.70E-01 ug/l	0.00E+00 lbs/day
Benzene	8.28E+01 ug/l	0.00E+00 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	5.13E+00 ug/l	0.00E+00 lbs/day
Chlorobenzene	2.45E+04 ug/l	0.00E+00 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	8.98E-04 ug/l	0.00E+00 lbs/day
1,2-Dichloroethane	1.15E+02 ug/l	0.00E+00 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.04E+01 ug/l	0.00E+00 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	4.90E+01 ug/l	0.00E+00 lbs/day
1,1,2,2-Tetrachloroethane	1.28E+01 ug/l	0.00E+00 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.63E+00 ug/l	0.00E+00 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	5.02E+03 ug/l	0.00E+00 lbs/day
2,4,6-Trichlorophenol	7.58E+00 ug/l	0.00E+00 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	5.48E+02 ug/l	0.00E+00 lbs/day
2-Chlorophenol	4.67E+02 ug/l	0.00E+00 lbs/day
1,2-Dichlorobenzene	1.98E+04 ug/l	0.00E+00 lbs/day
1,3-Dichlorobenzene	3.03E+03 ug/l	0.00E+00 lbs/day

1,4-Dichlorobenzene	3.03E+03 ug/l	0.00E+00 lbs/day
3,3'-Dichlorobenzidine	8.98E-02 ug/l	0.00E+00 lbs/day
1,1-Dichloroethylene	3.73E+00 ug/l	0.00E+00 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	9.22E+02 ug/l	0.00E+00 lbs/day
1,2-Dichloropropane	4.55E+01 ug/l	0.00E+00 lbs/day
1,3-Dichloropropylene	1.98E+03 ug/l	0.00E+00 lbs/day
2,4-Dimethylphenol	2.68E+03 ug/l	0.00E+00 lbs/day
2,4-Dinitrotoluene	1.06E+01 ug/l	0.00E+00 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	6.30E-01 ug/l	0.00E+00 lbs/day
Ethylbenzene	3.38E+04 ug/l	0.00E+00 lbs/day
Fluoranthene	4.32E+02 ug/l	0.00E+00 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.98E+05 ug/l	0.00E+00 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	1.87E+03 ug/l	0.00E+00 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	4.20E+02 ug/l	0.00E+00 lbs/day
Dichlorobromomethane(HM)	2.57E+01 ug/l	0.00E+00 lbs/day
Chlorodibromomethane (HM)	3.97E+01 ug/l	0.00E+00 lbs/day
Hexachlorocyclopentadiene	1.98E+04 ug/l	0.00E+00 lbs/day
Isophorone	7.00E+02 ug/l	0.00E+00 lbs/day
Naphthalene		
Nitrobenzene	2.22E+03 ug/l	0.00E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	1.63E+04 ug/l	0.00E+00 lbs/day
4,6-Dinitro-o-cresol	8.92E+02 ug/l	0.00E+00 lbs/day
N-Nitrosodimethylamine	9.45E+00 ug/l	0.00E+00 lbs/day
N-Nitrosodiphenylamine	1.87E+01 ug/l	0.00E+00 lbs/day
N-Nitrosodi-n-propylamine	1.63E+00 ug/l	0.00E+00 lbs/day
Pentachlorophenol	9.57E+00 ug/l	0.00E+00 lbs/day
Phenol	5.37E+06 ug/l	0.00E+00 lbs/day
Bis(2-ethylhexyl)phthalate	6.88E+00 ug/l	0.00E+00 lbs/day
Butyl benzyl phthalate	6.07E+03 ug/l	0.00E+00 lbs/day
Di-n-butyl phthalate	1.40E+04 ug/l	0.00E+00 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.40E+05 ug/l	0.00E+00 lbs/day
Dimethyl phthlate	3.38E+06 ug/l	0.00E+00 lbs/day
Benzo(a)anthracene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Benzo(a)pyrene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Benzo(b)fluoranthene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Benzo(k)fluoranthene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Chrysene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day

Pyrene (PAH)	1.28E+04 ug/l	0.00E+00 lbs/day
Tetrachloroethylene	1.04E+01 ug/l	0.00E+00 lbs/day
Toluene	2.33E+05 ug/l	0.00E+00 lbs/day
Trichloroethylene	9.45E+01 ug/l	0.00E+00 lbs/day
Vinyl chloride	6.12E+02 ug/l	0.00E+00 lbs/day
Pesticides		
Aldrin	1.63E-04 ug/l	0.00E+00 lbs/day
Dieldrin	1.63E-04 ug/l	0.00E+00 lbs/day
Chlordane	6.88E-04 ug/l	0.00E+00 lbs/day
4,4'-DDT	6.88E-04 ug/l	0.00E+00 lbs/day
4,4'-DDE	6.88E-04 ug/l	0.00E+00 lbs/day
4,4'-DDD	9.80E-04 ug/l	0.00E+00 lbs/day
alpha-Endosulfan	2.33E+00 ug/l	0.00E+00 lbs/day
beta-Endosulfan	2.33E+00 ug/l	0.00E+00 lbs/day
Endosulfan sulfate	2.33E+00 ug/l	0.00E+00 lbs/day
Endrin	9.45E-01 ug/l	0.00E+00 lbs/day
Endrin aldehyde	9.45E-01 ug/l	0.00E+00 lbs/day
Heptachlor	2.45E-04 ug/l	0.00E+00 lbs/day
Heptachlor epoxide		
PCB's		
PCB 1242 (Arochlor 1242)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1254 (Arochlor 1254)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1221 (Arochlor 1221)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1232 (Arochlor 1232)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1248 (Arochlor 1248)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1260 (Arochlor 1260)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1016 (Arochlor 1016)	5.25E-05 ug/l	0.00E+00 lbs/day
Pesticide		
Toxaphene	8.75E-04 ug/l	0.00E+00 lbs/day
Metals		
Antimony	ug/l	lbs/day
Arsenic	ug/l	lbs/day
Asbestos	ug/l	lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	ug/l	lbs/day
Cyanide	ug/l	lbs/day
Lead		
Mercury	ug/l	lbs/day
Nickel	ug/l	lbs/day
Selenium		
Silver		
Thallium	ug/l	lbs/day
Zinc		

Dioxin		
Dioxin (2,3,7,8-TCDD)	1.63E-08 ug/l	0.00E+00 lbs/day

Metals Effluent Limitations for Protection of All Beneficial Uses Based upon Water Quality Standards and Toxics Rule

	Class 4 Acute Agricultural ug/l	Class 3 Acute Aquatic Wildlife ug/l	Acute Toxics Drinking Water Source ug/l	Acute Toxics Wildlife ug/l	1C Acute Health Criteria ug/l	Acute Most Stringent ug/l	Class 3 Chronic Aquatic Wildlife ug/l
Aluminum		874.6				874.6	N/A
Antimony				5016.4		5016.4	
Arsenic	116.7	396.5			0.0	116.7	221.5
Barium						0.0	
Beryllium						0.0	
Cadmium	11.7	15.9			0.0	11.7	1.2
Chromium (III)		9376.8			0.0	9376.8	448.1
Chromium (VI)	116.5	18.0			0.0	18.00	12.17
Copper	233.2	91.0				91.0	51.6
Cyanide		25.7	256652.3			25.7	6.1
Iron		1166.4				1166.4	
Lead	116.5	972.2			0.0	116.5	37.8
Mercury		2.80		0.17	0.0	0.17	0.014
Nickel		2563.1		5366.4		2563.1	284.8
Selenium	58.1	23.1			0.0	23.1	5.1
Silver		101.9			0.0	101.9	
Thallium				7.3		7.3	
Zinc		656.1				656.1	656.1
Boron	875.0					875.0	

Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]
[If Acute is more stringent than Chronic, then the Chronic takes on the Acute value.]

	WLA Acute ug/l	WLA Chronic ug/l	
Aluminum	874.6	N/A	
Antimony	5016.38		
Arsenic	116.7	221.5	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	11.7	1.2	
Chromium (III)	9376.8	448	
Chromium (VI)	18.0	12.2	
Copper	91.0	51.6	

Cyanide	25.7	6.1
Iron	1166.4	
Lead	116.5	37.8
Mercury	0.175	0.014
Nickel	2563.1	285
Selenium	23.1	5.1
Silver	101.9	N/A
Thallium	7.3	
Zinc	656.1	656.1
Boron	874.95	

Other Effluent Limitations are based upon R317-1.

E. coli 126.0 organisms per 100 ml

X. Antidegradation Considerations

The Utah Antidegradation Policy allows for degradation of existing quality where it is determined that such lowering of water quality is necessary to accommodate important economic or social development in the area in which the waters are protected [R317-2-3]. It has been determined that certain chemical parameters introduced by this discharge will cause an increase of the concentration of said parameters in the receiving waters. Under no conditions will the increase in concentration be allowed to interfere with existing instream water uses.

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is required.

XI. Colorado River Salinity Forum Considerations

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value.

XII. Summary Comments

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

XIII. Notice of UPDES Requirement

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information.
Permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations provided that the values in this wasteload analysis [TMDL] are not compromised. See special provisions in Utah Water Quality Standards for adjustments in the Total Dissolved Solids values based upon background concentration.

Antidegredation Review

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that the proposed discharge will require a Level II Antidegradation Review.

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FILE COPY

STATE OF UTAH
DIVISION OF WATER QUALITY
DEPARTMENT OF ENVIRONMENTAL QUALITY
SALT LAKE CITY, UTAH

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Minor Municipal Permit No. **UT0025984**

In compliance with provisions of the Utah *Water Quality Act, Title 19, Chapter 5, Utah Code Annotated ("UCA") 1953, as amended* (the *"Act"*),

CITY OF EPHRAIM LAGOONS

is hereby authorized to discharge from its wastewater treatment facility to receiving waters named

SAN PITCH RIVER,

in accordance with specific limitations, outfalls, and other conditions set forth herein.

This permit shall become effective on July 1, 2013

This permit expires at midnight on June 30, 2018.

Signed this 13 day of May, 2013.

Walter L. Baker, P.E.
Director

Table of Contents

I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS

A. Description of Discharge Point.
The authorization to discharge wastewater provided under this part is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit are violations of the *Act* and may be subject to penalties under the *Act*. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Act*.

Outfall Number	Location of Discharge Outfall
001	Located at 39°22'32.3" and longitude 111°37'48.2" through the lagoon overflow pipe and disinfection system to a ditch, then travels one mile to empty into the San Pitch River.to the San Pitch River

B. Narrative Standard.
It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum, or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by a bioassay or other tests performed in accordance with standard procedures.

C. Specific Limitations and Self-Monitoring Requirements.

1. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Effluent Limitations			
	Monthly Average	Weekly Average	Minimum	Maximum
Flow, MGD Dec. 1 – Feb. 28 Mar 1 - Nov. 30	 NA NA	 NA NA	 NA NA	 1.94 0
BOD_5, mg/L BOD_5 Min. % Removal	25 85	35 NA	NA NA	NA NA
TSS, mg/L TSS Min. % Removal	25 85	35 NA	NA NA	NA NA
E-coli	126	157	NA	NA
DO, mg/L	NA	NA	5.0	NA
TRC, mg/L	0.116	NA	NA	0.219
TDS, mg/L	NA	NA	NA	1200
Oil & Grease, mg/L	NA	NA	NA	10
pH, Standard Units	NA	NA	6.5	9.0

NA – Not Applicable

Self-Monitoring and Reporting Requirements *a			
Parameter	**Frequency**	**Sample Type**	**Units**
Total Flow *b, *c	Continuous	Recorder	MGD
BOD_5, Influent	2 X Weekly	Grab	mg/L
Effluent	2 X Weekly	Grab	mg/L
TSS, Influent	2 X Weekly	Grab	mg/L
Effluent	2 X Weekly	Grab	mg/L
E-Coli, No./100mL	2 X Weekly	Grab	No./100mL
Total Dissolved Solids, mg/L	Monthly	Grab	mg/l
Dissolved Oxygen, mg/L	2 X Weekly	Grab	mg/l
Ammonia, mg/L	Monthly	Grab	mg/l
pH	2 X Weekly	Grab	SU
TRC*d	Daily	Grab	mg/L
Oil & Grease	Monthly	Grab	mg/L
Metals *e	Yearly	Grab/Composite	mg/L
Total Toxic Organics	1st, 3rd, and 5th Year of the Permit Cycle	Grab	mg/l

Metals Monitoring *e			
Parameter	**Sample Type**	**Frequency**	**Units**
Total Arsenic	Composite	Yearly	mg/L
Total Cadmium			
Total Chromium			
Total Copper			
Total Cyanide			
Total Lead			
Total Mercury	Composite/Grab		
Total Molybdenum	Composite		
Total Nickel			
Total Selenium			
Total Silver			
Total Zinc			

*a See Definitions, *Part VIII*, of Permit for definition of terms.
*b Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
*c If the rate of discharge is controlled, the rate and duration of discharge shall be reported.
*d Only sample when disinfection is being used
*e Metals are sampled on a frequency that is less than a facility of this size would normally be required. Due to the seasonal nature of the discharge the frequency is reduced. If the seasonal nature is discontinued, and they are allowed to discharge year round the frequency will be adjusted to reflect the change.

D. Reporting of Wastewater Monitoring Results.

Monitoring results obtained during the previous month shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1) or by NetDMR, post-marked or entered into NetDMR no later than the 28th day of the month following the completed reporting period. The first report is due on August 28, 2013. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part VII.G)*, and submitted by NetDMR, or to the Division of Water Quality at the following address:

Department of Environmental Quality
Division of Water Quality
PO Box 144870
Salt Lake City, Utah 84114-4870

E. Land Application Requirements

1. Monitoring Requirements

a. Coverage Under the General Permit

(1) This General Permit for Land Disposal of Municipal Wastewater, UTOP002 shall apply to Wastewater Systems located in the State of Utah that do not discharge to surface waters under normal operating conditions.

(2) In order to be considered eligible for coverage under the terms and conditions of this General Permit, the owner, operator, or authorized agent of a facility must submit a completed Notice of Intent (NOI) to the Division of Water Quality. This UPDES Permit serves as the NOI and as approval of coverage from the Director.

b. Specific Requirements

(1) During the term of this General Permit, the following requirements apply to all of the wastewater lagoons covered by this permit.

(a) There shall be no discharges to Waters of the State except as provided for in Paragraph (b);

(b) The discharge of water from emergency overflow systems shall occur only as a result of equipment failure and the need to protect the plant from flooding and/or to prevent severe property damage and will be allowed only if the facility has been properly operated and maintained. If such a discharge occurs, whenever possible the permittee shall dispose of the overflow on land to avoid any potential impacts on receiving waters.

(c) Monitoring Requirements

Routine Monitoring Requirements		
Parameters	Measurement Frequency	Sample Type
Flow, (GPD)	Weekly	Continuous
E-Coli	Monthly	Grab
Total Inorganic Nitrogen (NH_4+NH_3+NO_2+NO_3)	Monthly	Grab
Irrigated Acreage	Monthly	Estimated

(2) Best Management Practices

(a) The permittee shall take such precautions as are necessary to maintain and operate the facility in a manner that will minimize upsets and ensure stable operating conditions.

(b) The permittee shall visually inspect, at least weekly, the pond(s) to determine if there is adequate freeboard to minimize the likelihood of an accidental discharge occurring. If it is determined that a discharge is occurring and/or there is not adequate freeboard, the appropriate corrective measures shall be taken immediately.

(c) The permittee shall take precautions and have erosion control measures in place that, in the event of a bypass of treatment, the discharge will not cause any erosion into the Waters of the State.

II. INDUSTRIAL PRETREATMENT PROGRAM

A. Pretreatment Reporting Requirements.

1. Because the design capacity of this municipal wastewater treatment facility is less than 5 MGD, the permittee will not be required to develop a State-approved industrial pretreatment program at this time. However, in order to determine if development of an industrial pretreatment program is warranted, the permittee shall conduct an **industrial waste survey**, as described in *Part II.B.1*, and submit it to the Division of Water Quality within **sixty (60) calendar days** of the effective date of this permit.

B. Industrial Wastes.

1. The "Industrial Waste Survey" as required by *Part II.A.1*. consists of; identifying each significant industrial user (SIU), determination of the qualitative and quantitative characteristics of each discharge, and appropriate production data. A (SIU) is defined as an industrial user discharging to a publicly-owned treatment works (POTW) that satisfies any of the following: (1) has a process wastewater flow of 25,000 gallons or more per average work day; (2) has a flow greater than five percent of the flow carried by the municipal system receiving the waste; (3) is subject to Categorical Pretreatment Standards, or (4) has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

2. The permittee must notify the Director of any new introductions by new or existing SIUs or any substantial change in pollutants from any major industrial source. Such notice must contain the information described in 1. above and be forwarded no later than sixty (60) days following the introduction or change.

3. Pretreatment Standards (*40 CFR 403.5*) developed pursuant to *Section 307* of *The Water Quality Act of 1987* require that under no circumstances shall the permittee allow introduction of the following pollutants into the waste treatment system from any source of non-domestic discharge:

   a. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, waste streams with a closed cup flashpoint of less than 140˚F (60˚C);

   b. Pollutants, which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;

   c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;

   d. Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge at such volume or strength as to cause interference in the POTW;

   e. Heat in amounts, which will inhibit biological activity in the POTW, resulting in interference, but in no case, heat in such quantities that the influent to the sewage treatment works exceeds 104˚F (40˚C);

   f. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

g. Pollutants which result in the presence of toxic gases, vapor, or fumes within the POTW in a quantity that may cause worker health or safety problems; or,

h. Any trucked or hauled pollutants, except at discharge points designated by the POTW.

i. Any pollutant that causes pass through or interference at the POTW.

4. In addition to the general and specific limitations expressed above, more specific pretreatment limitations have been and will be promulgated for specific industrial categories under *Section 307* of *the Water Quality Act of 1987 as amended (WQA). (See 40 CFR, Subchapter N, Parts 400* through *500*, for specific information).

5. The permittee shall provide adequate notice to the Director and the Division of Water Quality Industrial Pretreatment Coordinator of;

   a. Any new introduction of pollutants into the treatment works from an indirect discharger (i.e., industrial user) which would be subject to *Sections 301* or *306* of the *WQA* if it were directly discharging those pollutants;

   b. Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit; and

   c. For the purposes of this section, adequate notice shall include information on:

      (1) The quality and quantity of effluent to be introduced into such treatment works; and,

      (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from such publicly owned treatment works.

6. At such time as a specific pretreatment limitation becomes applicable to an industrial user of the permittee, the Director may, as appropriate, do the following:

   a. Amend the permittee's UPDES discharge permit to specify the additional pollutant(s) and corresponding effluent limitation(s) consistent with the applicable national pretreatment limitation;

   b. Require the permittee to specify, by ordinance, contract, or other enforceable means, the type of pollutant(s) and the maximum amount which may be discharged to the permittee's facility for treatment. Such requirement shall be imposed in a manner consistent with the POTW program development requirements of the *General Pretreatment Regulations* at *40 CFR 403*; and/or,

   c. Require the permittee to monitor its discharge for any pollutant, which may likely be discharged from the permittee's facility, should the industrial user fail to properly pretreat its waste.

7. The Director retains, at all times, the right to take legal action against the industrial user and/or the treatment works, in those cases where a permit violation has occurred because of the failure of an industrial user to discharge at an acceptable level. If the permittee has

failed to properly delineate maximum acceptable industrial contributor levels, the Director will look primarily to the permittee as the responsible party.

8. If local limits are developed per R317-8-8.5(4) (b) to protect the POTW from pass-through or interference, then the POTW must submit limits to DWQ for review and public notice R317-8-8.5(4) (c).

III. BIOSOLIDS REQUIREMENTS

The State of Utah has adopted the 40 CFR 503 federal regulations for the disposal of sewage sludge (biosolids) by reference. However, since this facility is a lagoon, there is not any regular sludge production. Therefore 40 CFR 503 does not apply at this time. In the future, if the sludge needs to be removed from the lagoons and is disposed in some way, the Division of Water Quality must be contacted prior to the removal of the sludge to ensure that all applicable state and federal regulations are met.

IV. STORM WATER REQUIREMENTS

Wastewater treatment facilities, which includes treatment lagoons, are required to comply with storm water permit requirements if they meet one or both of the following criteria,

1 The facility has an approved pretreatment program as described in 40 CFR Part 403.
2. The facility has a design flow of 1.0 MGD or greater.

The Ephraim facility fits one of these criteria for exclusion from a UPDES Storm Water Permit by a No Exposure Certification. The facility only recently became required to submit a No Exposure Certification. They have submitted a No Exposure Certification for coverage during this permit cycle and have met all requirements. Therefore, no storm water permitting requirements will be required at this time.

V. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS

A. Representative Sampling

Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Samples of biosolids shall be collected at a location representative of the quality of biosolids immediately prior to the use-disposal practice.

B. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10 and 40CFR Part 503*, unless other test procedures have been specified in this permit.

C. Penalties for Tampering

The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Compliance Schedules.

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

E. Additional Monitoring by the Permittee.

If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10* and *40 CFR 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or the Biosolids Report Form. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

F. Records Contents.

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements:
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

G. Retention of Records.

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location

H. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 536-4300, or 24-hour answering service (801) 231-5729.

2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4300 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:

   a. Any noncompliance which may endanger health or the environment;

   b. Any unanticipated bypass, which exceeds any effluent limitation in the permit (See *Part VI.G, Bypass of Treatment Facilities.)*;

   c. Any upset which exceeds any effluent limitation in the permit (See *Part VI.H, Upset Conditions*.);

   d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit; or,

   e. Violation of any of the Table 3 metals limits, the pathogen limits, the vector attraction reduction limits or the management practices for biosolids that have been sold or given away.

3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected;

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and,

   e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.

4. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 536-4300.

5. Reports shall be submitted to the addresses in *Part I.D, Reporting of Monitoring Results.*

I. Other Noncompliance Reporting

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part I.D* are submitted. The reports shall contain the information listed in *Part V.H.3*

J. Inspection and Entry

The permittee shall allow the Executive Secretary, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, including but not limited to, biosolids treatment, collection, storage facilities or area, transport vehicles and containers, and land application sites;

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location, including, but not limited to, digested biosolids before dewatering, dewatered biosolids, biosolids transfer or staging areas, any ground or surface waters at the land application sites or biosolids, soils, or vegetation on the land application sites; and,

5. The permittee shall make the necessary arrangements with the landowner or leaseholder to obtain permission or clearance, the Executive Secretary, or authorized representative, upon the presentation of credentials and other documents as may be required by law will be permitted to enter without delay for the purposes of performing their responsibilities.

VI. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply
The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions.
The *Act* provides that any person who violates a permit condition implementing provisions of the *Act* is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions or the Act is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding $50,000 per day. Except as provided at *Part VI.G, Bypass of Treatment Facilities* and *Part VI.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense.
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate
The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.

E. Proper Operation and Maintenance
The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances.
Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.

G. Bypass of Treatment Facilities

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential

maintenance to assure efficient operation. These bypasses are not subject to paragraph 2 and 3 of this section.

2. Prohibition of Bypass.

   a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

      (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;

      (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and

      (3) The permittee submitted notices as required under *section VI.G.3*.

   b. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in *sections VI.G.2.a (1), (2) and (3)*.

3. Notice.

   a. *Anticipated bypass*. Except as provided above in *section VI.G.2* and below in *section VI.G.3.b*, if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Executive Secretary:

      (1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages:

      (2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Director in advance of any changes to the bypass schedule;

      (3) Description of specific measures to be taken to minimize environmental and public health impacts;

      (4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;

      (5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and,

      (6) Any additional information requested by the Executive Secretary.

b. *Emergency Bypass*. Where ninety days advance notice is not possible, the permittee must notify the Executive Secretary, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Director the information in *section VI.G.3.a.(1) through (6)* to the extent practicable.

c. *Unanticipated bypass*. The permittee shall submit notice of an unanticipated bypass to the Director as required under *Part IV.H*, Twenty Four Hour Reporting. The permittee shall also immediately notify the Director of the Department of Natural Resources, the public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. Executive Secretary's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under *Part V.H, Twenty-four Hour Notice of Noncompliance Reporting*; and,

   d. The permittee complied with any remedial measures required under *Part VI.D, Duty to Mitigate*.

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

VII. GENERAL REQUIREMENTS

A. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of parameters discharged or pollutant sold or given away. This notification applies to pollutants, which are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Director of any planned changes at least 30 days prior to their implementation.

B. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information

The permittee shall furnish to the Executive Secretary, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Executive Secretary, upon request, copies of records required to be kept by this permit.

F. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Executive Secretary, it shall promptly submit such facts or information.

G. Signatory Requirements

All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to the Executive Secretary, and,

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

3. Changes to authorization. If an authorization under *paragraph VII.G.2* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *paragraph VII.G.2.* must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports
The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports
Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of Executive Secretary. As required by the *Act*, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability
Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Act*.

K. Property Rights
The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. Severability

The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers

This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 20 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittee's containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph *2* above.

N. State or Federal Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.

O. Water Quality - Reopener Provision

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.

3. Revisions to the current CWA § 208 area wide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and adopted by DWQ which calls for different effluent limitations than contained in this permit.

P. Biosolids – Reopener Provision

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate biosolids limitations (and compliance schedule, if necessary), management practices, other appropriate requirements to protect public health and the environment, or if there have been substantial changes (or such changes are planned) in biosolids use or disposal practices; applicable management practices or numerical limitations for pollutants in biosolids have been promulgated which are more stringent than the

requirements in this permit; and/or it has been determined that the permittees biosolids use or land application practices do not comply with existing applicable state of federal regulations.

Q. Toxicity Limitation - Reopener Provision
This permit may be reopened and modified (following proper administrative procedures) to include whole effluent toxicity (WET) testing, a WET limitation, a compliance date, additional or modified numerical limitations, or any other conditions related to the control of toxicants if toxicity is detected during the life of this permit.

R. Storm Water-Reopener Provision
At any time during the duration (life) of this permit, this permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include, any applicable storm water provisions and requirements, a storm water pollution prevention plan, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the control of storm water discharges to "waters-of-State".

S. Total Maximum Daily Load-Reopener Provision.
This permit may be reopened and modified (following proper administrative procedures) to include Total Maximum Daily Load (TMDL) monitoring, related effluent limits, a compliance schedule, a compliance date, additional or modified numerical limitations, or any other conditions related to the TMDL Process and activity in effected impaired water body.

VIII. DEFINITIONS

A. Wastewater

1. The "7-day (and weekly) average", other than for e-coli bacteria, fecal coliform bacteria, and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. Geometric means shall be calculated for e-coli bacteria, fecal coliform bacteria, and total coliform bacteria. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains Saturday.

2. The "30-day (and monthly) average," other than for e-coli bacteria, fecal coliform bacteria and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. Geometric means shall be calculated for e-coli bacteria, fecal coliform bacteria and total coliform bacteria. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.

3. "Act," means the *Utah Water Quality Act*.

4. "Bypass," means the diversion of waste streams from any portion of a treatment facility.

5. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:

   a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

   b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;

   c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,

   d. Continuous sample volume, with sample collection rate proportional to flow rate.

6. "CWA," means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.

7. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.

8. "EPA," means the United States Environmental Protection Agency.

9. "Executive Secretary," means Director of the Utah Water Quality Board.

10. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

11. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.

12. "Severe Property Damage," means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

13. "Upset," means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

FILE COPY

EPHRAIM CITY

AMENDMENT TO WASTEWATER CAPITAL FACILITIES PLAN

JULY 2012 *(Amended November 2012)*

Jones & DeMille Engineering

RICHFIELD ▪ PRICE ▪ MANTI ▪ ROOSEVELT

[1108-089]

Table of Contents

EXECUTIVE SUMMARY

Ephraim City hired Sunrise Engineering to complete a wastewater capital facility plan in 2010/2011. The plan did not include discharge alternatives to the San Pitch River because a letter was sent from the Division of Water Quality (DWQ) stating that the San Pitch River is impaired and the Total Dissolved Solid (TDS) discharge limit had been exceeded, therefore no additional discharge was allowed. It was stated in the letter that "it would not be feasible for Ephraim City to implement a new discharge to the San Pitch River, as it would violate the Total Maximum Daily Load (TMDL), which the Division of Water Quality is required to enforce."

The State of Utah developed the San Pitch River TMDL to address the agricultural beneficial use impairment in the San Pitch River between Gunnison Reservoir and UT Highway 132 road crossing in Moroni, UT; referred to as the Middle San Pitch River. The TMDL was approved by the U.S. EPA and adopted by rule into the Utah Administrative Code R317-1-7.32 on November 18th, 2003. (UAC R317-1-7, 2012). The TMDL requirement applies during the critical season between March 1 and September 30 for the San Pitch designated agricultural beneficial use 4. The TMDL does not apply outside of that time period from October 1 to the end of February. Therefore it is likely that the City could obtain a discharge permit and discharge to the San Pitch River from December 1 through the end of February. In order to develop the most economical, long term solution for Ephraim City's wastewater it is necessary to include the options of discharging to the San Pitch River.

The purpose of this Ephraim City Capital Facilities Plan Amendment is to further explore options including discharge to the San Pitch River that will help Ephraim City meet future wastewater demands of the growing community. Current wastewater flows are close to maximizing the capacity of the existing lagoons. A 20-year projected design flow of the permanent residents and local college attendance of 1.31 million gallons per day (MGD) was studied.

The alternatives considered in this amendment include:

1. Alternative 2A: Facultative Lagoon treatment with new Winter Storage Lagoons with Treated Effluent Winter Discharge to the San Pitch River
2. Alternative 3A: Aeration of Existing Primary Lagoons and new Winter Storage Lagoons with Treated Effluent Discharge to the San Pitch River
3. Alternative 7: Facultative Lagoon Treatment with new Winter Storage Lagoons with Seasonal Land Application and Winter Discharge to the San Pitch River (Preferred)
4. Alternative 8: Facultative Lagoon Treatment with new Winter Storage Lagoons with Seasonal Land Application
5. Alternative 9: Mechanical Treatment (SBR and MBR)
6. Alternative 10: Total Containment Lagoon. Covered by Sunrise Engineering in original Capital Facilities Plan

Alternative 7 is the preferred alternative for Ephraim City. This alternative is the most cost effective and provides the City with the most flexibility now and in the future. The total estimated cost of the project alternative is $2,131,000.

3.1A DESIGN FLOW

A 20-year projected design flow of 1.31 MGD based on Ephraim City and Snow College historical flow and winter culinary water usage was used to analyze the wastewater system upgrade alternatives. The design flow was based on projected population and estimated average wastewater flow rates to determine the necessary capacity needed in 2032.

3.2A PROJECTED FLOW RATE

Ephraim City population projections and wastewater flow rates were updated to reflect the most recent data and projections from the college. These projections were then analyzed and reviewed with City Staff. This resulted in slightly different population and flow projections than in the Sunrise Capital Facility Plan. Appendix A, Exhibit 1 shows calculations for projected population and flow rates summarized within this section. The projected flow rate for the 20-year design accounts for both residents and students as discussed with Bryan Kimball, P.E., AICP of Ephraim City. According to past building permits given to permanent residents, a growth rate of 4.5% was established. Projected Snow College growth rate was estimated at 6.25%, because there is the potential of becoming a 4-year university, and recent growth rate has been high. Table 3.2A.1 indicates a total design population of 18636 people using the yearly growth percentages aforementioned. Ephraim City metered winter culinary and sewer flows from 2007 to 2011 were analyzed to determine a conservative 70 gallons per capita per day (GPCPD) average design flow. For 2011 the actual average flow was 0.37 MGD, which does not represent the conservative 70 GPCPD. This design flow rate applied to the projected design population results in a 20-year design flow rate of 1.31 million gallons per day (MGD) as shown in Table 3.2A.1.

The monthly student flows were adjusted during the months of May thru August to account for reduced student population during summer break. The reduction of flow during that period was determined by looking at the monthly average flows from 2007 to 2011 and calculating average monthly reduction of approximately 12% from May into the summer months. Summer months flows were adjusted accordingly to give a more accurate water balance model.

Table 3.2A.1 Projected Population

	Average Population Projection			
	Permanent Resident	College Student		Inflow based on 70 gpcpd for total population[1]
Year	4.5%	6.25%	Total Population	(MGD)
2011	3117	3018	6135	0.37
2016	3884	4087	7971	0.56
2021	4841	5534	10374	0.73

2026	6032	7493	13525	0.95
2032	7856	10780	18636	1.31

(1) 2011 average daily inflow is based on actual measured flow. Subsequent projected flows are based on projected population values multiplied by the 70 gpdpc.

The design projected flow rate would increase the incoming BOD, which the State allows 6400 gal/day/acre for primary treatment; this increased design year flow would require approximately 63 total acres of primary cell treatment. Currently there is 44.7 acres of primary cell treatment and in order to comply with State Code, it would be most feasible to remove two dikes from the secondary cells that run North and South lengthwise and create the additional necessary acreage for primary treatment. Piping would have to occur in order to allow direct inflow into the new primary cell. An exhibit showing existing piping and the proposed piping is shown in the Appendix A, Exhibit 3.

3.3A HYDRAULIC CONDUCTIVITY

Obtaining an accurate hydraulic conductivity of the existing lagoons is a crucial factor in the overall design as it will affect how large the additional winter storage will need to be. The Utah State code requires a maximum rate of 1.0×10^{-6} cm/sec seepage through the bottom of the lagoons. The Sunrise report did a seepage test using the manholes between the different cells but the data was inconclusive to determine an accurate representation of the hydraulic conductivity.

In order to estimate the hydraulic conductivity, Darcy's Law and a current model of the incoming metered and average sewer flows from October 2011 to September 2012 were used. Approximately one foot of depth was gained between October and February and then Ephraim City discharged approximately 26.7 AC-FT of water at the end of February. By using a spreadsheet for the inflows and calculating the hydraulic conductivity to obtain the 26.7 AC-FT of discharge the seepage rate of 5.34×10^{-7} cm/sec was calculated. It is understood that the existing lagoon bottoms and dikes are constructed of native on-site compacted soil. Based on the calculated seepage rate, the native soil has very adequate clay content. The seepage rate is lower than the Utah State Code requirement and the additional winter storage for each alternative will conservatively be based off of this seepage rate even though a higher seepage rate may be achievable. Native soils will be analyzed in detail during design to determine the optimal achievable seepage rate with related soil density. Appendix A, Exhibit 2 contains detailed calculations for the hydraulic conductivity.

3.4A INTRODUCTION TO ALTERNATIVES

Alternatives 2A and 3A are amendments to the Sunrise Report alternatives while Alternatives 7, 8, 9 and 10 are new alternatives. For all alternatives, the transfer structures between existing secondary and tertiary lagoons will need to be upgraded or parallel structures installed to hydraulically move a minimum of 3 cubic feet per second (CFS) between lagoons with minimal headloss. The wastewater effluent quality criteria are the same as the Sunrise report lists and follow all Utah State codes for

effluent wastewater. The effluent wastewater design parameters include an assumed average Biological Oxygen Demand (BOD)/Chemical Oxygen Demand (COD) loading of 200 mg/l and a Total Suspended Solids (TSS) loading of 250 mg/l. It is anticipated that the required effluent conditions of 25 mg/l monthly average and 35 mg/l weekly average for both BOD_5 and TSS would be met along with the coliform and e.coli Total Maximum Daily Loads.

The State of Utah conducted waste load analyses for various flow rates and various discharge periods. The waste load analysis for 3 cubic feet per second (cfs) for the period December 1 through the end of February resulted in favorable results with minimal impact to the San Pitch River. The summary results of that analysis are included in Appendix G.

The state sampled discharge from the last polishing cell outflow, receiving ditch and receiving waters on February 16, 2012 (see Figure 1). The results from the sample are shown in Table 1. Discharge was necessary because of high probability of over overtopping the lagoon dikes.

Figure 1. San Pitch River, Drainage Ditch, and Ephraim Lagoon Sampling Locations

From the sampling data the E. Coli and Coliform are much lower than the receiving waters and comply with Type II discharge. To see full details of the state's visit during the discharge period see Appendix A, Exhibit 5. Because of the sensitivity of discharging from a Non-Discharging Wastewater Lagoon into a Utah water body a Stipulation and Consent Agreement (SCA) was created. Please see Appendix A, Exhibit 4 and 6 for the Environmental Obstacle Exhibit which identifies known wetlands, stock watering artesian wells, and other drainage obstacles within the project alternatives areas and the SCA document.

Table 1. E. Coli and Coliform sample results (2/16/2012).

Monitoring Location ID	Location	Time	Coliform (MPN/100 mL)	E. coli (MPN/100 mL)
4946585	Ephraim City Lagoon Cell 7 near overflow pipe	15:59:22	13.1	1
4946580	Ephraim Lagoon Drainage Ditch east of 1100W	16:23:10	290.9	3.1
4946545	San Pitch River at River Lane Road	17:16:05	209.8	7.4

The effects of discharging to the San Pitch River have been evaluated based on data gathered during and after the emergency discharge event the late winter of 2012. Table 1 identifies the parameters of potential concern and the loading calculated from the proposed seasonal discharge between December 1 and February (90 days) at a flow rate of 3 CFS. The values given below are considered conservative because the discharge rate of 3 cfs will not need to occur over the full 90 days during the study period, and 3 cfs is considered a maximum flow.

		Effluent	Ditch	River	
Parameter	Units	Avg. Daily Value			Loading Rate (lbs/d)
BOD_5	mg/L	4.42	-	-	72
TSS, Effluent	mg/L	9.25	36.80	13.20	150
E.Coli	no./100mL	1.50	3.10	7.40	110096496**
pH	mg/L	8.78	8.32	8.60	
Dissolved Oxygen	mg/L	6.45	10.41	18.25	104
TRC, Effluent*	mg/L	N/A	N/A	N/A	-
TDS, Effluent	mg/L	520	518	744	8414
Ammonia as (N)	mg/L	0.77	0.11	-	12
Total Phosphorus	mg/L	1.16	0.10	0.11	19
Coliform, Total	MPN/100ML	15.03	290.90	209.80	1102799902**
Carbonaceous BOD	mg/L	2.75	-	-	44

*The low numbers for E.Coli, and Coliform indicated that chlorination would not be needed. Therefore, no readings were taken for TRC.
**Numbers are in the units/day not in lbs/day.

During emergency discharge the TDS of the effluent was below the background of the San Pitch River.

Data shown are average values resulting from samples collected by Utah DEQ Division of Water Quality and Ephraim City between 18-Aug-2011 to 8-Mar-2012. Complete sampling testing results are included

in Appendix. A wasteload analysis was performed by the Utah Division of Water Quality and attached to the end of the report.

5.3.3A ALTERNATIVE 2A:

FACULTATIVE LAGOON TREATMENT WITH DISCHARGE TO SAN PITCH RIVER

Alternative 2A involves expansion and enhancement of the existing total containment lagoon system to allow for winter discharge of treated effluent, see section 3.3A for effluent details. Given the population projections in Table 3.2A.1, a projected 20-year design flow of 1.31 MGD will require approximately 60 acres of winter storage while discharging to the San Pitch River from December 1 to the end of February.

The existing lagoon system has adequate detention and storage over approximately the next 11 years if carefully operated, and drained to 3-foot depth by the end of February. Assuming average climatic conditions and steady wastewater flow by approximately the year 2023 the existing lagoon system would not have enough storage or winter detention capacity, consequently additional capacity would be needed. See Appendix B, Exhibit 1 for detailed calculations for Alternative 2A.

Table 5.3.3A.1 shows a summary of the monthly inflows into the wastewater facility and the overflow to the winter storage when the primary and secondary cells are operating at a max depth of 6 ft. The discharge outflow is the 3 month period of discharge to the San Pitch River. The detention time illustrates that the lagoons are meeting the Utah State Code requirements of detention time based on flow by exceeding the required minimums of 120 days November thru February and 60 days March thru October.

TABLE 5.3.3A.1. 20-YEAR (YEAR 2032) PROJECTION OF FACULATIVE LAGOON WITH DISHARGE TO SAN PITCH RIVER

MONTH	PRIMARY INFLOW (AC. FT.)	WINTER STORAGE INFLOW (AC. FT.)	WINTER STORAGE POND DEPTH (FEET)	DISCHARGE OUTFLOW (AC. FT.)	DETENTION TIME (DAYS)
OCT	124.11	19.37	4.874	0.00	181
NOV	120.11	106.62	6.515	0.00	206
DEC	124.11	109.72	5.046	184.46	184
JAN	124.11	109.90	3.652	184.46	163
FEB	112.10	100.46	2.488	166.61	146
MAR	124.11	112.13	4.356	0.00	174
APR	120.11	77.58	5.135	0.00	185
*MAY**	109.22	53.01	5.282	0.00	188
JUN	105.70	38.58	5.029	0.00	184
JUL	109.22	35.24	4.639	0.00	178
AUG	109.22	44.46	4.548	0.00	177
SEP	120.11	70.29	5.096	0.00	185

*May-August 12% reduced flow for college summer break

By the year 2032, a continuous average flow rate of 3 CFS from December 1 to the end of February would be necessary to discharge the required amount of wastewater to provide enough freeboard to make it to the summer months of increased evaporation. The City may need to increase the discharge flow rate at times during the discharge period due to climatic conditions. Treated effluent would be discharged into the existing irrigation drainage surface ditch located near the northwest corner of the existing lagoons. The existing drainage ditch carries continuous flows of approximately 0.25 to 1 CFS (depending upon upstream irrigation and weather conditions) approximately 1 mile west to the San Pitch River.

Prior to 2032 the discharge will be adjusted to operate at or above 3-ft minimum depth according to Utah State Code. Detention time also becomes a limiting factor when discharging. Utah code requires 150 days of detention time in a non-disinfecting discharging system or 120 days in the winter and 60 days in the summer for disinfecting discharging system. To save cost by preventing minimal disinfectant use, discharge will need to be adjusted to comply with minimum detention rules.

The winter storage required for the 20-year design is 60 surface acres of water, assuming 12 foot depth is obtained. Additional storage after the 20 year design period may need to be immediately added to accommodate the yearly growth if estimated growth projections hold true. See Appendix B, Exhibit 2 for storage and chlorination/dechlorination sites and sizing.

Detailed cost estimates for this alternative can be found in Appendix B, Exhibit 3. The estimated capital cost for this alternative is $2,815,000.

5.3.6.1 ALTERNATIVE 3A:

AERATED PRIMARY LAGOON WITH DISCHARGE TO SAN PITCH RIVER

Given the population projections in Table 3.2A.1, a projected 20-year design flow of 1.31 MGD will require approximately 60 acres of winter storage while discharging to the San Pitch River from December 1 to the end of February. Alternative 3A involves expansion and enhancement of the existing total containment lagoon system to allow for winter discharge of treated effluent, see section 3.3A for effluent details.

The existing lagoon system has adequate detention and storage over approximately the next 11 years if carefully operated, and drained to 3-foot depth by the end of February. Assuming average climatic conditions and steady wastewater flows by approximately the year 2023 the existing lagoon system would not have enough storage or winter detention capacity and addition capacity would be needed. See Appendix C, Exhibit 1 for detailed calculations for Alternative 3A.

This alternative is similar to Alternative 2A and Table 5.3.3A.1 can be referenced for this alternative. This alternative would add aeration systems to the primary cells which would reduce the required

detention times in winter and summer by half. This would require less observation from the operator on whether the discharge would need to be adjusted to meet the detention times. If the discharge could be increased the aerated primary lagoons would decrease detention time and would allow for more wastewater to be displaced then required winter storage could be reduced.

The winter storage required for the projected 20-year design is 62 surface acres of water. Additional storage after the 20 years may need to be immediately added to accommodate the yearly growth if estimated growth projections hold true. A cost benefit would be the reduction of disinfection used because of the increased biological treatment efficiency from added oxygen. See Appendix C, Exhibit 2 for storage and chlorination/dechlorination sites and sizing.

Detailed cost estimates for this alternative can be found in Appendix C, Exhibit 3. The estimated capital cost for this alternative is $3,122,000.

5.3.8 AMENDMENT ALTERNATIVE 7: FACULTATIVE LAGOON WITH SEASONAL LAND APPLICATION AND WINTER DISCHARGE TO SAN PITCH RIVER

Given the population projections in Table 3.2A.1, a projected 20-year design flow of 1.31 MGD will require approximately 18 acres of winter storage while discharging to the San Pitch River from December 1 to the end of February, and land applying to nearby pastureland sometime in March, depending on climate, to the end of October. Alternative 7 involves expansion and enhancement of the existing total containment lagoon system to allow for winter discharge of treated effluent and installation of a pivot sprinkler for land applying, see section 3.3A for effluent details.

Chlorination and de-chlorination equipment will be incorporated into this alternative. The City would chlorinate and de-chlorinate all effluent being discharged to the San Pitch River, however City officials may periodically choose to not disinfect if the effluent at the last winter storage lagoon is considerably higher quality than the minimum required discharging levels. Effluent for land application will be treated by chlorination only to levels that inhibit algae growth in application piping and nozzles.

The existing lagoon system has adequate detention and storage over approximately the next 11 years if carefully operated, and drained to 3-foot depth by the end of February. By approximately the year 2023 the existing lagoon system would not have enough storage or winter detention capacity and additional storage capacity would be needed. See Appendix D, Exhibit 1 for detailed calculations for Alternative 7.

Table 5.3.8.1 shows the monthly inflows into the wastewater facility and the overflow to the winter storage with the primary and secondary cells operating at a max depth of 6 ft. The discharge outflow is the 4 month period of discharge to the San Pitch River. The land application column represents the evapotranspiration (ET) numbers for the Ephraim City area for pasture grass from NRCS/UACD. Two inches per month were added as the goal for land application but to dispose as much wastewater as possible without changing the condition of the land. The detention time illustrates that the lagoons are

meeting the Utah State Code requirements of detention time based on flow by exceeding the required minimums of 120 days November thru February and 60 days March thru October.

Table 5.3.8.1 20-YEAR PROJECTION OF FACULATIVE LAGOON WITH LAND APPLICATION AND DISHARGE TO SAN PITCH RIVER

MONTH	PRIMARY INFLOW (AC. FT.)	LAND APPLICATION (AC. FT)	WINTER STORAGE INFLOW (AC. FT.)	WINTER STORAGE POND DEPTH (FEET)	DISCARGE OUTFLOW (AC. FT.)	DETENTION TIME (DAYS)
OCT	124.11	15.98	19.37	4.739	0.00	134
NOV	120.11	0.00	106.62	10.533	0.00	182
DEC	124.11	0.00	109.72	5.969	184.46	163
JAN	124.11	0.00	109.90	1.632	184.46	143
FEB	112.10	0.00	172.76	1.998	166.61	142
MAR	124.11	8.13	43.22	3.970	0.00	137
APR	120.11	20.85	77.58	6.625	0.00	158
*MAY**	109.22	30.39	53.01	7.075	0.00	153
JUN	105.70	38.08	38.58	6.126	0.00	146
JUL	109.22	44.53	35.24	4.581	0.00	138
AUG	109.22	43.66	44.46	3.796	0.00	137
SEP	120.11	35.91	70.29	5.117	0.00	149

*May-August 12% reduced flow for college summer break

Discharge Period

Land Application Period

Being able to combine the discharging and land application will allow for less winter storage for the 20-year design flow. The amount of wastewater land applied will be climate dependent as a hot dry year will allow for a greater disposal amount than a cold wet year

The winter storage required for the 20-year design flow is 18 surface acres of water. Additional storage after the 20 years would need to be immediately added to accommodate the yearly growth if projections hold true. See Appendix D, Exhibit 2 for storage and chlorination/dechlorination sites and sizing.

Detailed cost estimates for this alternative can be found in Appendix D, Exhibit 4. The estimated capital cost for the alternative is $1,795,000.

5.3.9 AMENDMENT ALTERNATIVE 8: FACULTATIVE LAGOON WITH LAND APPLICATION

Given the population projections in Table 3.2A.1, a projected 20-year design flow of 1.31 MGD will require approximately 80 acres of new winter storage lagoons while land applying to available 65 acres nearby pasture March 1 to the end of October. Alternative 8 involves expansion and enhancement of the existing total containment lagoon system to allow for installation of a pivot sprinkler for land applying, see section 3.3A for effluent details.

The existing lagoon system does not have adequate storage; therefore additional winter storage should be built immediately. See Appendix E, Exhibit 1 for detailed calculations for Alternative 8.

Table 5.3.9.1 shows the monthly inflows into the wastewater facility and the overflow to the winter storage when the primary and secondary cells are operating at a maximum depth of 6 ft. The land application column represents the ET numbers for the Ephraim City area for pasture grass from NRCS/UACD. Two inches per month were added, as the goal for land application is not to efficiently raise a crop but to dispose as much wastewater as possible without changing the condition of the pasture land. The detention time illustrates that the lagoons are meeting the Utah State Code requirements of detention time based on flow by exceeding the required minimums of 120 days November thru February and 60 days March thru October.

Table 5.3.9.1 20-YEAR PROJECTION OF FACULATIVE LAGOON WITH LAND APPLICATION

MONTH	PRIMARY INFLOW (AC. FT.)	LAND APPLICATION (AC. FT)	WINTER STORAGE INFLOW (AC. FT.)	WINTER STORAGE POND DEPTH (FEET)	DETENTION TIME (DAYS)
OCT	124.11	15.98	19.37	4.594	205
NOV	120.11	0.00	106.62	5.803	251
DEC	124.11	0.00	109.72	6.985	275
JAN	124.11	0.00	109.90	8.116	298
FEB	112.10	0.00	100.46	9.121	316
MAR	124.11	8.13	112.13	10.109	338
APR	120.11	20.85	77.58	10.043	328
*MAY**	109.22	30.39	53.01	9.359	309
JUN	105.70	38.08	38.58	8.285	283
JUL	109.22	44.53	35.24	7.038	258
AUG	109.22	43.66	44.46	6.104	241
SEP	120.11	35.91	70.29	5.839	243

*May-August 12% reduced flow for college summer break

Land Application Period

The land application is for 65 acres of available land but if additional land was acquired then storage acreage could be reduced slightly. Table 5.3.9.2 shows comparison of increased land application acres and the proportional necessary reduced winter storage.

Table 5.3.9.2. LAND APPLICATION COMPARISON

Land Application Acreage *(acres)*	Necessary Winter Storage Acreage *(acres)*
65	80
70	77
75	74
80	71
100	61
150	58
250	58

Table 5.3.9.2 shows additional land application reduces necessary winter storage to a point where the spring months, particularly March and April, will over flow because the opportunity for land application is minimal and water levels are rising as surface evaporation from the lagoon water surface is low and precipitation is high. If during the spring months land application is increased just a few inches, the acres of winter storage can be reduced by a few acres. It is risky to rely on early spring land application in the Ephraim area because cold wet springs do occur. Freezing spring conditions could cause pivot equipment and application issues and the pasture land will not accept as much water. See Appendix E, Exhibit 2 for storage and chlorination/dechlorination sites and sizing.

Detailed cost estimates for this alternative can be found in Appendix E, Exhibit 3. The estimated capital cost for this alternative would be $3,684,000.

5.3.10 AMENDMENT ALTERNATIVE 9
MECHANICAL TREATMENT

The Division of Water Quality requested that a mechanical treatment alternative be explored on a cursory level where approximate costs could be determined and compared against discharge alternatives. Recent analysis of nearby communities for mechanical plants for their capital facility plans provided a comparison analysis of their capital costs to the amount of wastewater treated for both Sequencing Batch Reactor (SBR) and Membrane Batch Reactor (MBR). By comparison of capital cost per volume of treated water (1000 gallons)per day; the capital cost of treating 1.31 MGD for Ephraim City would be $39,340,000 = MBR and $20,425,000 = SBR. Appendix F, Exhibit 1 has detailed calculations of comparison cost analysis.

5.3.10 AMENDMENT ALTERNATIVE 10
Total Containment Lagoon

In addition to less degrading alternatives versus discharging to the San Pitch River, relevant aspects of the Total Containment Lagoon alternative from the Sunrise Report were analyzed and updated using the

same design basis as this amendment. A total containment lagoon system will require an additional 136 acres of storage. The city would have to purchase most of this land and the possibility of having to pump some of the lagoons because of topography will add the cost for this alternative. Detailed cost estimates for this alternative can be found in Appendix F, Exhibit 2. The estimated capital cost for this alternative would be $5,082,000.

5.3.10 ALTERNATIVE ANALYSIS AND RECOMMENDED ALTERNATIVE

FACULTATIVE LAGOON WITH LAND APPLICATION AND DISCHARGE TO SAN PITCH RIVER

In order to select the most feasible and least degrading alternative, six alternatives were looked at. Originally four alternatives were analyzed and compared, but in order to select the most feasible alternative the degradation of the receiving waters had to be considered as well as the resulting nutrient impact. Table 5.3.10.1 lists the alternatives from least degrading to most degrading for the receiving waters if discharged. Alternative 10, 9 and 8 do not discharge to the San Pitch River and thus would be considered least degrading, but they are 20% higher in cost than the lowest cost discharge alternative.

Alternative 7 is less degrading to the San Pitch River because it would not require discharge to the receiving water as soon as the other discharging alternatives, even though all three discharge alternatives were evaluated using 3 CFS as the discharge flow rate. The total annual discharge would less than the other discharge alternatives as well. Alternative 7, Facultative Lagoon Treatment with Seasonal Land Application and Winter Discharge to the San Pitch River is the most feasible and economical alternative for Ephraim City for their wastewater treatment lagoons. The projected 20-year design flow will require additional storage of 18 water surface acres.

From Table 5.3.10.1 Alternative 7 is also most feasible because it requires the smallest winter storage and has the longest breaking point, which is the year when winter storage is needed. The breaking point is based on average climate conditions and optimal careful operation in which the lagoons are drawn down as much as possible through land app. and/or discharge, and allowed to fill to complete capacity allowing for no freeboard. Breaking point could vary significantly depending on these factors and changes to population.

Table 5.3.10.1 ALTERNATIVE COMPARISON

Alternative(least degrading to most degrading)	Winter Storage *(acres)*	Breaking Point *(year)*	Total Cost
10-Total Containment Lagoon	Na	Na	$6,249,000
9-Mechanical Treatment-SBR	Na	Na	$20,425,000
8-Land Application	80	2011	$4,524,000
7-Discharge and Land Application	18	2025	$2,131,000
2A-Discharge to San Pitch River	60	2023	$3,497,000
3A-Aeration with discharge to San Pitch River	60	2023	$3,819,000

Alternative 7 takes advantage of combining Alternatives 2A and 8, which allows for seasonal effluent disposal year round. Because spring can potentially have ample amount of precipitation, land applying may not be possible therefore it would be recommended to build winter storage as soon as possible. Having excess winter storage now also reduces the amount of more costly winter discharge required during the next ten to twelve years.

For the recommended alternative 7, sub-options were explored to enhance the alternative and likely extend the design life beyond the projected 20-year design. The three sub-options are listed below:

1. Increase land application area by leasing land west of pivot point irrigating a ¾ circle (or more)
2. Purchase land west between the existing lagoons and road for winter storage and re-align road to north side of cells
3. Install aerators in primary lagoons to reduce required primary treatment detention time, improve treatment and allow for more in flexibility sampling, testing and discharging.

These sub-options would require additional research and therefore are not included in the cost opinion for the recommended alternative. An overview map of the sub-options can be seen in Appendix D, Exhibit 3.

6.0 CONCLUSION

Alternative 7, Facultative Lagoon Treatment with Seasonal Land Application and Seasonal Winter Discharge to the San Pitch River is the most feasible and economical alternative for Ephraim City for their wastewater treatment system. This alternative involves controlled treated effluent discharging to the San Pitch River from December 1 to the end of February, and land applying to nearby pasture land sometime in March to the end of October, which will allow for almost year round effluent disposal. It is assumed for this alternative that the transfer structures between existing secondary and tertiary lagoons will need to be upgraded to hydraulically move 3 to 4 CFS between lagoons. Alternative 7 will require more operational observation than the existing total containment system but will provide a more efficient treatment and disposal of the wastewater.

APPENDIX A-PROJECTED FLOW RATE

Appendix A shows data and tables used to design the projected population and flow rate for the 20-year design analysis and contain the draft report of the State's visit on February 16, 2012 and the SCA submitted to the Utah Water Quality Board. Flow rates and yearly growth percentages were determined by past data and communication with Ephraim City staff.

EXHIBIT 1

Table A1-A4. Historical Flows and Population

Monthly Average Flows (Million gallons per Month)				# of students with % reduction, @ 50 gpcd		
Year	Sept-April	May-August	% Reduction			
2005	8.45	7.49	11%	631		
2006	10.31	9.35	9%	631		
2007	9	7.32	19%	1105		
2008	9.07	7.39	19%	1105		
2009	11.48	12.25	-7%	-506		
2010	10.48	9.45	10%	677		
2011	9.89	8.76	11%	743		
		Avg. Reduction* =	12%	Avg. Stud.* =		757
		Avg. Reduction =	10%	Avg. Stud. =		627

*Excludes highest and lowest numbers to give a better average

Units in Million gallons per Month										
	2007		2008		2009		2010		2011	
Month	Culinary	Sewer	Culinary	Sewer	Culinary	Sewer	Culinary	Sewer	Culinary	Sewer
January	13.84	10.62	15.6	7.94	13.43	10.41	13.34	11.76	13.3	10.48
February	13.68	9.71	13.11	7.67	14.27	9.45	13.36	11.04	14.52	9.29
November	13.92	8.52	18.61	10.06	15.16	11.91	16.58	10.18	16.08	10.48
December	12.22	7.36	12.94	9.69	11.48	11.37	11.93	10.65	11.77	9.64
	Avg. % diff. =	33%	Avg. % diff. =	40%	Avg. % diff. =	20%	Avg. % diff. =	20%	Avg. % diff. =	28%
									Total Avg. % diff. =	30%

Population Projection			
	Resident	Student	
Year	4.50%	6.25%	Total
2011	3117	3018	6135
2012	3257	3207	6464
2013	3404	3407	6811
2014	3557	3620	7177
2015	3717	3846	7563
2016	3884	4087	7971
2017	4059	4342	8401
2018	4242	4613	8855
2019	4433	4902	9334
2020	4632	5208	9840
2021	4841	5534	10374
2022	5058	5879	10938
2023	5286	6247	11533
2024	5524	6637	12161
2025	5773	7052	12825
2026	6032	7493	13525
2027	6304	7961	14265
2028	6587	8459	15046
2029	6884	8988	15871
2030	7194	9549	16743
2031	7517	10146	17663
2032	7856	10780	18636

Monthly Total Sewer Inflows (Million gallons per month)																
	January	February	March	April	May	June	July	August	September	October	November	December	Total	Min	Max	Average
2005	5.39	9.06	10.32	11.78	7.40	7.44	7.62	7.50	7.16	7.30	7.13	9.43	97.52	5	12	8.13
2006	9.96	10.00	10.81	10.16	10.49	8.77	8.59	9.54	10.46	10.35	10.35	10.40	119.87	9	11	9.99
2007	10.62	9.71	10.88	7.79	7.25	6.65	7.30	8.09	8.78	8.37	8.52	7.36	101.31	7	11	8.44
2008	7.94	7.67	8.58	7.55	7.50	7.17	7.49	7.38	10.54	10.54	10.06	9.69	102.10	7	11	8.51
2009	10.41	9.45	10.48	11.25	11.71	12.33	12.51	12.45	13.25	13.74	11.91	11.37	140.85	9	14	11.74
2010	11.76	11.04	10.13	9.99	10.04	9.73	10.01	8.02	9.67	10.40	10.18	10.65	121.62	8	12	10.13
2011	10.48	9.29	9.31	9.90	7.91	8.26	8.74	10.14	9.51	10.51	10.48	9.64	114.17	8	11	9.51
2012*	10.27	10.16	10.15	10.11	7.98	7.15	0.00	0.00	0.00	0.00	0.00	0.00	43.50	0	10	3.63

*YTD

EXHIBIT 2

Table A5. Historical Sewer Inflows

Existing Facultative Lagoons

Primary Cells = 44.70 Acres

Hydraulic Conductivity= 0.0000005 cm/sec

Initial Depth (October 1)= 5.00 feet

MONTH	DAYS PER MONTH	MONTHLY FLOWS (MGD)	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	0.339	32.25	1.24	3.81	2.82	12.19	0.27	5.273	5.273	0.00
NOV	30	0.349	32.13	1.03	0.00	2.87	25.27	0.57	5.838	5.838	0.00
DEC	31	0.311	29.59	0.99	0.00	3.29	21.03	0.47	6.309	6.000	13.79
JAN	31	0.331	31.49	1.02	0.00	3.38	22.71	0.51	6.508	6.000	22.71
FEB	28	0.35	30.08	1.12	0.00	3.05	22.88	0.51	6.512	6.000	22.88
MAR	31	0.327	31.11	1.39	0.00	3.38	23.70	0.53	6.530	6.000	23.70
APR	30	0.337	31.03	1.31	5.10	3.27	4.73	0.11	6.106	6.000	4.73
MAY	31	0.281	26.73	1.28	7.23	3.38	-8.01	-0.18	5.821	5.821	0.00
JUN	30	0.287	26.42	0.83	8.70	3.17	-14.71	-0.33	5.492	5.492	0.00
JUL	31	0.287	27.31	0.75	9.65	3.09	-17.37	-0.39	5.103	5.103	0.00
AUG	31	0.291	27.69	0.89	8.26	2.87	-10.47	-0.23	4.869	4.869	0.00
SEP	30	0.329	30.29	1.03	6.03	2.65	1.78	0.04	4.909	4.909	0.00
TOTALS			356.13	12.88	48.78	37.22	83.74				87.81

Secondary Cells = 26.3 Acres

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	0.00	1.24	3.81	2.82	-11.80	-0.45	4.551	4.551	0.00
NOV	30	0.00	1.03	0.00	2.48	-3.18	-0.12	4.430	4.430	0.00
DEC	31	13.79	0.99	0.00	2.49	10.49	0.40	4.829	4.829	0.00
JAN	31	22.71	1.02	0.00	2.72	18.98	0.72	5.551	5.551	0.00
FEB	28	22.88	1.12	0.00	2.82	19.15	0.73	6.279	6.000	7.34
MAR	31	23.70	1.39	0.00	3.38	19.35	0.74	6.736	6.000	19.35
APR	30	4.73	1.31	5.10	3.27	-10.74	-0.41	5.592	5.592	0.00
MAY	31	0.00	1.28	7.23	3.15	-19.94	-0.76	4.833	4.833	0.00
JUN	30	0.00	0.83	8.70	2.63	-23.02	-0.88	3.958	3.958	0.00
JUL	31	0.00	0.75	9.65	2.23	-24.39	-0.93	3.031	3.031	0.00
AUG	31	0.00	0.89	8.26	1.71	-19.89	-0.76	2.274	2.274	0.00
SEP	30	0.00	1.03	6.03	1.24	-13.67	-0.52	1.754	1.754	0.00
TOTALS		87.81	12.88	48.78	30.94	-58.67				[illegible]

EXIHIBIT 3

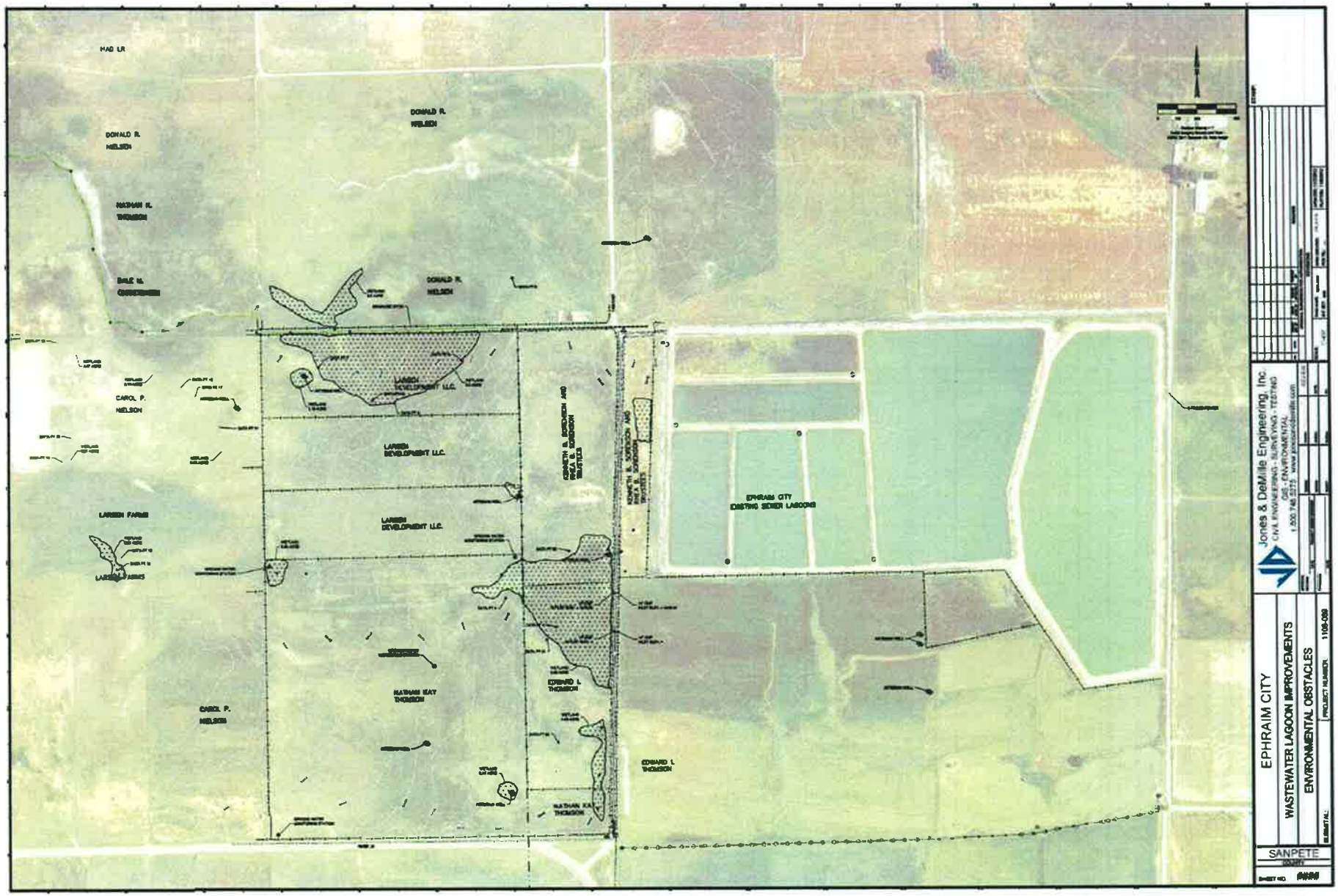
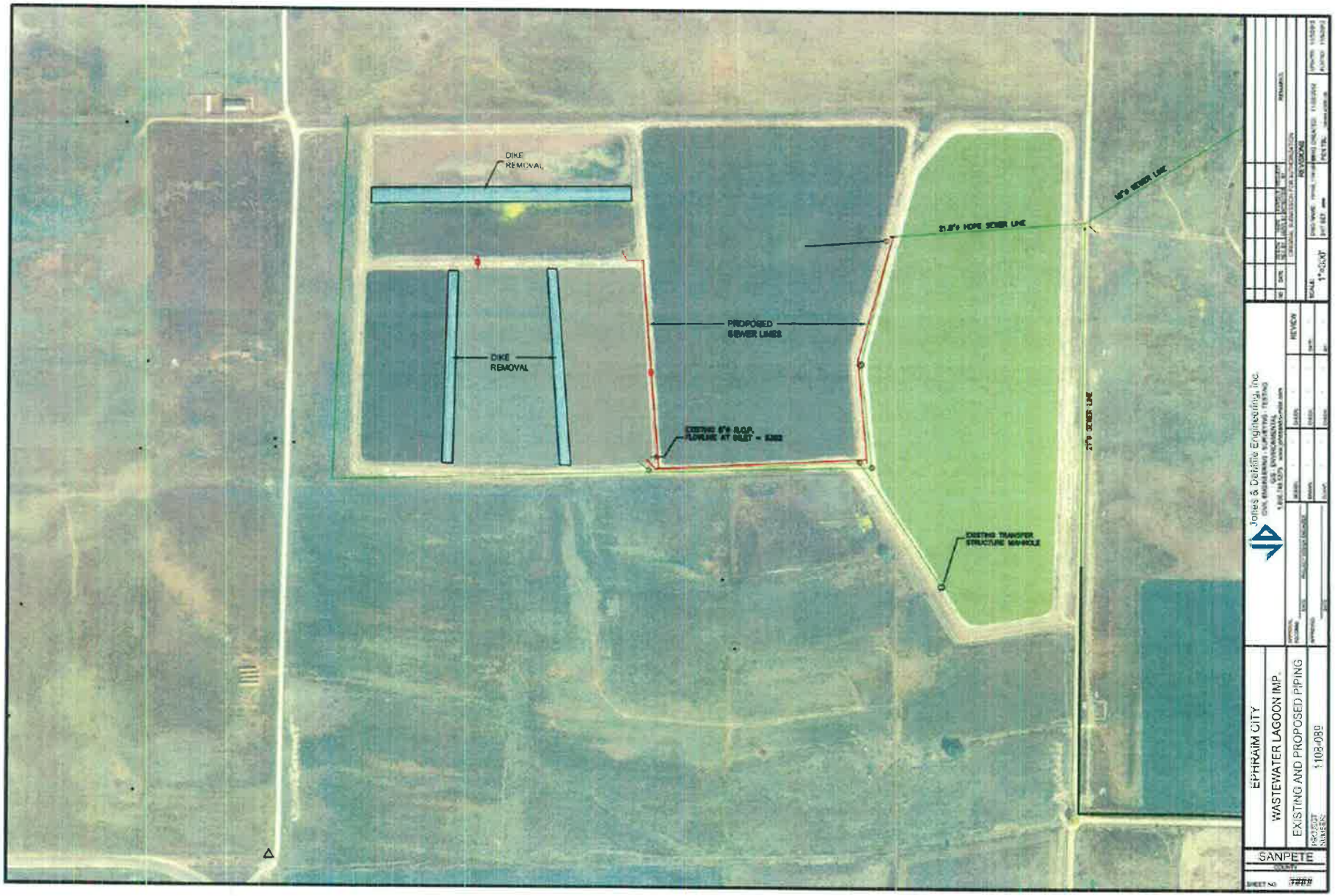

HAG LN
DONALD R. NIELSEN
NATHAN R. THOMSON
DALE M. CHRISTENSEN
CAROL P. NIELSEN
LARSEN DEVELOPMENT LLC.
LARSEN FARMS
KENNETH A. GORDON AND PAULA B. GORDON TRUSTEES
EPHRAIM CITY EXISTING SEWER LAGOONS
EDWARD L THOMSON
NATHAN KAY THOMSON
Jones & DeMille Engineering, Inc.
CIVIL ENGINEERING - SURVEYING - TESTING
GEO - ENVIRONMENTAL
EPHRAIM CITY
WASTEWATER LAGOON IMPROVEMENTS
ENVIRONMENTAL OBSTACLES
SANPETE COUNTY

EXHIBIT 4


DIKE REMOVAL
DIKE REMOVAL
PROPOSED SEWER LINES
21.5"ø HDPE SEWER LINE
18"ø SEWER LINE
27"ø SEWER LINE
EXISTING TRANSFER STRUCTURE MANHOLE
Jones & DeMille Engineering, Inc.
EPHRAIM CITY
WASTEWATER LAGOON IMP.
EXISTING AND PROPOSED PIPING
SANPETE

EXIHIBIT 5

Ephraim City Lagoons - Monitoring Trip Report

2/16/2012; 3:30 PM

Attendance:

Scott Daly - DWQ

Ben Brown - DWQ

Bryan Kimball – Ephraim City Engineer

Garrick Wilden – Jones and DeMille Engineering

Bryan Kimball and Garrick Wilden unlocked the facility and provided an orientation of the area. Bryan indicated that they would gravity discharge from the finishing cell (Figure 1, cell 7) through a concrete pipe into the drainage ditch adjacent to the lagoons. The ditch provides drainage for a number of flowing wells located adjacent to the lagoon site (Figure 1). The city recently cleaned the drainage ditch with a track hoe and replaced the 12 inch culvert under the road just west of the lagoons with an 18 inch culvert to prepare for discharge. Flow in the drainage ditch at site 4946580 was measured at 0.695 cfs. All samples and field measurements were collected from the lagoon banks due to the presence of ice on the lagoon. Location 4946585 is the approximate location of the overflow pipe intake.

Figure 1. Ephraim City Lagoon Sampling Locations.

Water released through the lagoon overflow pipe will discharge into the drainage ditch approximately 10 meters east of 1100 West then flow approximately 1 mile west to the San Pitch River (Figure 1, Figure 2, and Photo 1). The confluence was inaccessible due to time constraints and logistics of the required 2 mile round trip hike. There is potential to reach the river via a private ranch access, otherwise the river is inaccessible upstream of the drainage ditch. Approximately 0.2 miles downstream from the confluence, the San Pitch becomes highly channelized and flows in the West Ditch and continues to Gunnison Reservoir. Station 4946545 is located approximately 1.25 miles downstream from the drainage ditch confluence (Figure 2).

Figure 2. San Pitch River, Drainage Ditch, and Ephraim Lagoon Sampling Locations.

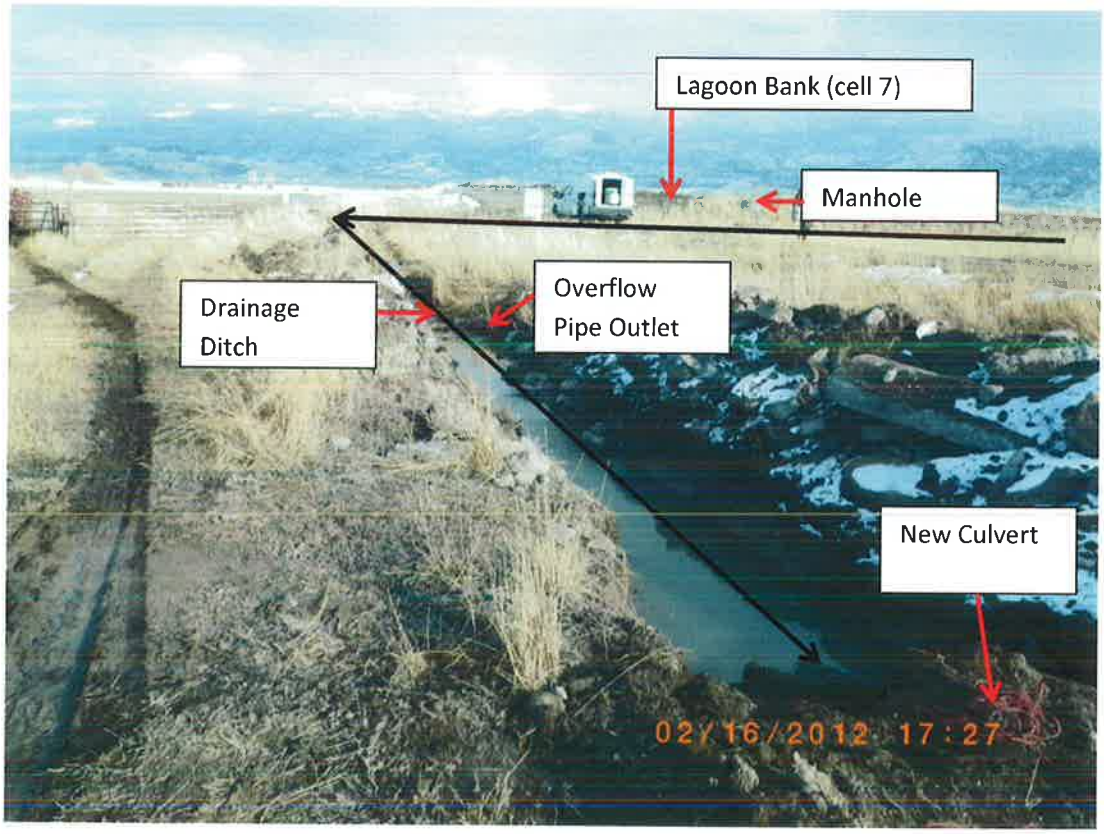


Photo 1. Looking east from 1100 W toward Cell 7 and drainage ditch. Note overflow pipe and manhole cover.

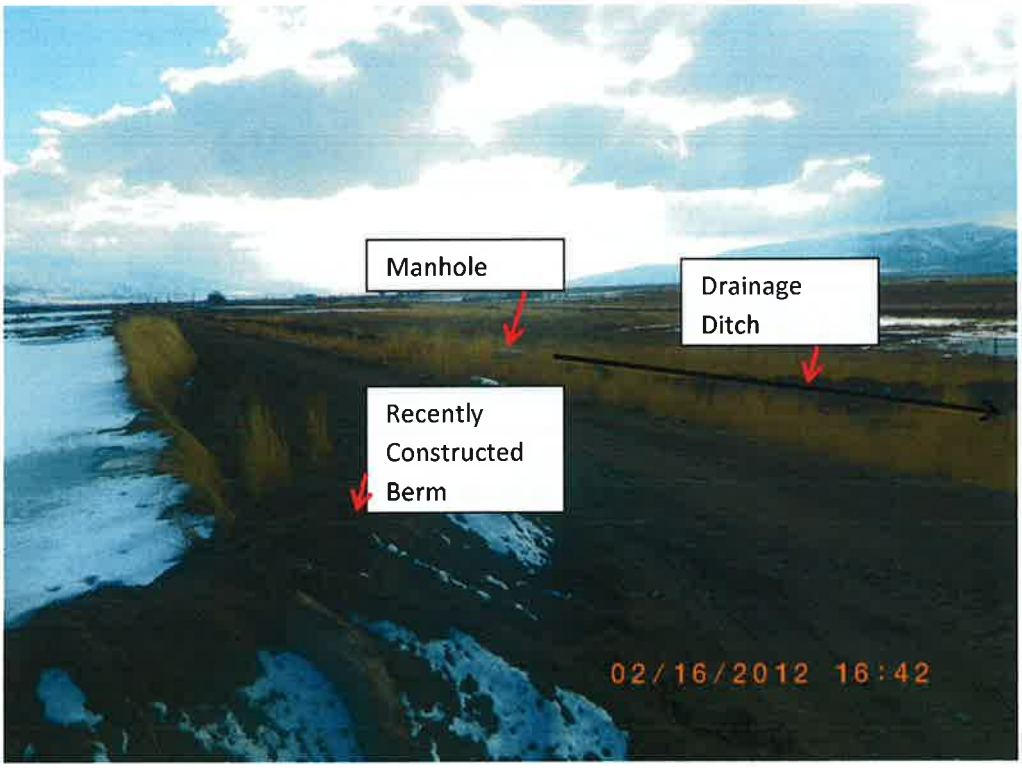


Photo 2. Lagoon cell 7 looking south. Note manhole, drainage ditch, and raised berm.

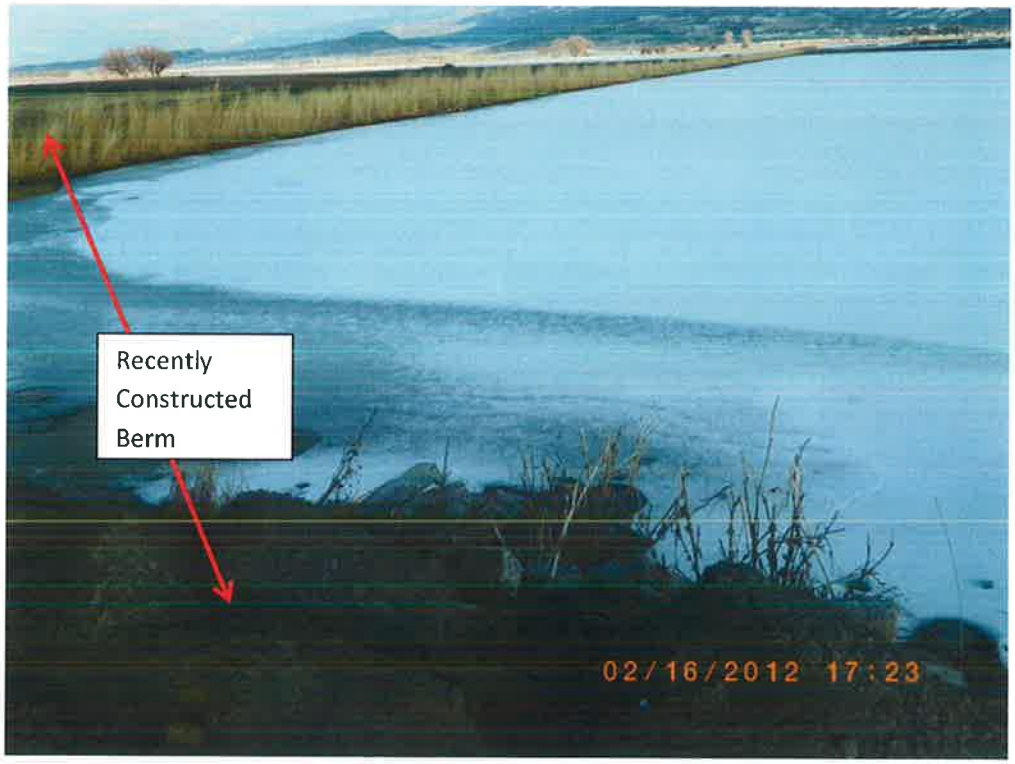


Photo 3. Lagoon cell 7 looking northeast.

Photo 4. San Pitch River looking south from River Lane Road; Station 4946545.

Field parameters were collected at all locations while water chemistry was sampled at station 4946585, 4946580, and 4946545 (Table 1). Flow was not collected at the San Pitch River site (4946546) due to high velocity and equipment failure. The site was unwadeable and the Q-Boat malfunctioned. The local water master estimated the flow in the San Pitch River to be roughly 50 cfs, however, his estimates were based on the change in storage in Gunnison Reservoir and reservoir outflow which is located more than 10 miles downstream. We estimated flow at 100 cfs based on best professional judgment. A staff gage located next to the bridge in Photo 4 showed a depth of 1.48 feet and channel width is 30 feet as measured by Google Earth. A flow ranging between 100 cfs and 150 cfs does not seem unreasonable considering the unwadeable velocity.

Table 1. Sample Event Summary (2/16/2012).

Monitoring Location ID	Location	Time	Field Parameters	Water Chemistry	Flow
4946585	Ephraim City Lagoon Cell 7 near overflow pipe	15:59:22	x	x	NA
4946580	Ephraim Lagoon Drainage Ditch east of	16:23:10	x	x	x

	1100W				
Cell #1	SW Corner of Lagoon Cell 1	16:36:31	x		NA
Cell #2	SW Corner of Lagoon Cell 2	16:44:06	x		NA
Cell #3	SW Corner of Lagoon Cell 3	16:48:45	x		NA
Cell #4	SW Corner of Lagoon Cell 4	16:52:29	x		NA
Cell #5	SW Corner of Lagoon Cell 5	16:55:51	x		NA
Cell #6	SW Corner of Lagoon Cell 6	16:59:15	x		NA
4946545	San Pitch River at River Lane Road	17:16:05	x	x	NS

X – Parameter sampled

NA – not applicable

NS – Not sampled due to unwadeable conditions and equipment failure.

Table 2 shows the results of field parameters collected on 2/16/2012. Specific conductance ranged from a maximum of 1,255 uS/cm in lagoon cell #7 to a minimum of 1,026 uS/cm in lagoon cell #3. Specific conductance at station 4946545 was 1,220 uS/cm. Historical data collected 1.25 miles downstream at station 4946540 between 1990 and 2002 show that specific conductance ranges between 854 uS/cm and 5,190 uS/cm. Additionally, the average TDS to specific conductance ratio at station 4946540 is 0.62.

Table 2. Field Parameter Summary (2/16/2012).

Monitoring Location ID	Location	Time	Temp (*C)	pH	Sp. Cond. (uS/cm)	Salinity	DO (%)	DO (mg/L)
4946585	Ephraim City Lagoon Cell 7 near overflow pipe	15:59:22	3.04	8.2	1255	0.66	56	6.45
4946580	Ephraim Lagoon Drainage Ditch east of 1100W	16:23:10	6.55	7.52	1034	0.54	99	10.41
Cell #1	SW Corner of Lagoon Cell 1	16:36:31	3.99	8.58	1153	0.61	46.8	5.25
Cell #2	SW Corner of Lagoon Cell 2	16:44:06	1.44	6.99	1187	0.62	12.7	1.53
Cell #3	SW Corner of Lagoon Cell 3	16:48:45	2.5	7.96	1026	0.54	91.1	10.64
Cell #4	SW Corner of Lagoon Cell 4	16:52:29	0.81	8.38	1033	0.54	115.9	14.19
Cell #5	SW Corner of Lagoon Cell 5	16:55:51	2.33	8.4	1126	0.59	137.7	16.16
Cell #6	SW Corner of Lagoon Cell 6	16:59:15	1.51	8.58	1162	0.61	160.2	19.22

4946545	San Pitch River at River Lane Road	17:16:05	5.33	8.13	1220	0.64	168.5	18.26

Table 3 through Table 6 display lab results for e. coli, nutrients, suspended and dissolved solids, and COD, respectively.

Table 3. E. coli and coliform sample results (2/16/2012).

Monitoring Location ID	Location	Time	Coliform (MPN/100 mL)	E. coli (MPN/100 mL)
4946585	Ephraim City Lagoon Cell 7 near overflow pipe	15:59:22	13.1	1
4946580	Ephraim Lagoon Drainage Ditch east of 1100W	16:23:10	290.9	3.1
4946545	San Pitch River at River Lane Road	17:16:05	209.8	7.4

Table 4. Nutrient Related Lab Results (2/16/2012).

Monitoring Location ID	Location	pH	Ammonia as N (mg/L)	B.O.D. 5 (mg/L)	Total P (mg/L)	Dissolved P (mg/L)	T.K.N. (mg/L)	Total N (mg/L)	Nitrate + Nitrite as N (mg/L)
4946585	Ephraim City Lagoon Cell 7 near overflow pipe	8.72	0.133	5	1.38	1.34	2.91	2.14	0.021
4946580	Ephraim Lagoon Drainage Ditch east of 1100W	8.32	0.112	nd	0.097	0.061	0.978	5.75	4.88
4946545	San Pitch River at River Lane Road	8.6	nd	nd	0.11	0.097	0.918	1.41	0.612

Nd – Non-detect.

Table 5. Suspended and Dissolved Solids Lab Results (2/16/2012).

Monitoring Location ID	Location	TSS (mg/L)	TDS (mg/L)	Sp. Cond. (umhos/cm)	TDS:Sp Cond
4946585	Ephraim City Lagoon Cell 7 near overflow pipe	4.4	572	1049	0.55
4946580	Ephraim Lagoon Drainage Ditch east of 1100W	36.8	518	1044	0.50
4946545	San Pitch River at River Lane Road	13.2	744	1227	0.61

Table 6. COD Lab Results (2/16/2012).

Monitoring Location ID	Location	COD (mg/L)
4946585	Ephraim City Lagoon Cell 7 near overflow pipe	24.0
4946580	Ephraim Lagoon Drainage Ditch east of 1100W	<10.0
4946545	San Pitch River at River Lane Road	17.0

EXHIBIT 6

UTAH WATER QUALITY BOARD

IN THE MATTER OF	:	**DOCKET NUMBER XXX12-XX**
EPHRAIM CITY	:	**STIPULATION AND CONSENT**
SANPETE COUNTY, UTAH	:	**AGREEMENT**

A. STATUTORY AUTHORITY

This **STIPULATION AND CONSENT AGREEMENT** is issued to Ephraim City (hereafter **Ephraim**) by the UTAH WATER QUALITY BOARD (the **BOARD**) under the Utah Water Quality Act, Utah Code Ann. § 19-5-101 to 19-5-123 (the **ACT**), including sections 19-5-104, 19-5-106, 19-5-111 and 19-5-115. This **CONSENT AGREEMENT** is also issued in

accordance with the Utah Administrative Procedures Act, Utah Code Ann. § 63G-4-101 to 63G-4-601. The **BOARD** has authorized the Executive Secretary of the Board (**EXECUTIVE SECRETARY**) to issue such **NOTICES AND ORDERS** in accordance with §19-5-106(8) of the Utah Code.

B. APPLICABLE STATUTORY AND REGULATORY PROVISIONS

1. *UCA § 19-5-102(21)(a)* defines waters of the state as "all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion of the state."

2. *UCA § 19-5-107(1)(a)* states: "Except as provided in this chapter or rules made under it, it is unlawful for any person to discharge a pollutant into waters of the state or to cause pollution which constitutes a menace to public health and welfare, or is harmful to wildlife, fish or aquatic life, or impairs domestic, agricultural, industrial, recreational, or other beneficial uses of water, or to place or cause to be placed any waste in a location where there is probable cause to believe it will cause pollution."

3. *UCA § 19-5-107(3)(a)* states: "It is unlawful for any person, without first securing a permit from the executive secretary as authorized by the board, to: make any discharge not authorized under an existing valid discharge permit." See also *Utah Admin. Code R317-1-1.34.*

4. *Utah Admin. Code R317-2-7.2* prohibits any person from discharging or placing any waste or other substance in such a way as will be or may:

> "become offensive such as unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste; or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by bioassay or other tests performed in accordance with standard procedures."

5. *UAC R317-1-2.1* states: "No person shall discharge wastewater or deposit wastes or other substances in violation of the requirements of these regulations."

6. The **Ephraim** wastewater treatment facility is under the coverage of the General Operating Permit For Non-Discharging Wastewater Lagoons (**Permit**), which states in

Part I. B, 1, (a, b, c); "During the term of this permit, the following requirements apply to all of the wastewater lagoons covered by this permit;

a. There shall be no discharges to Waters of the State except as provided for in paragraphs b.
b. The discharge of water from emergency overflow systems shall occur only as a result of equipment failure and the need to protect the plant from flooding and/or to prevent severe property damage and will be allowed only if the facility has been properly operated and maintained. If such a discharge occurs, whenever possible the permittee shall dispose of the overflow on land to avoid any potential impacts on receiving waters.
c. Monitoring Requirements.

Routine Monitoring Requirements		
Parameters	Measurement Frequency	Sample Type
Flow, (GPD)	Weekly	Continuous
Depth, (ft)	Weekly	Estimated

7. Part I, B, 2, b of the **Permit** requires: "The permittee shall visually inspect, at least weekly, the pond(s) to determine if there is adequate freeboard to minimize the likelihood of an accidental discharge occurring. If it is determined that a discharge is occurring and/or there is not adequate freeboard, the appropriate corrective measures shall be taken immediately."

8. Part II, C of the **Permit** requires: "Reporting Requirements. All monitoring shall be recorded monthly on spreadsheet, provided by the Division of Water Quality. All reports shall contain the information required in Part I.B and shall be submitted electronically to: pkrauth@utah.gov."

9. Section 303(d) of the Clean Water Act (**CWA**) and the corresponding Code of Federal Regulations 40 C.F.R. §130.7 requires States to develop Total Maximum Daily Loads (**TMDL**) for water quality impaired segments to include a Load Allocation (**LA**) for nonpoint sources and a Waste Load Allocation (**WLA**) for point sources of pollution (40 C.F.R. §130.7, 2003). This section also requires a **WLA** developed in the **TMDL** analysis to be included in all discharging facility **NPDES** permits. This requirement is more explicitly stated in 40 C.F.R. § 122.44(d)(1)(vii)(B):

   "(B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available **WLA** for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7."

10. The State of Utah developed the San Pitch River **TMDL** to address the agricultural beneficial use impairment in the San Pitch River between Gunnison Reservoir and UT Highway 132 road crossing in Moroni, UT; referred to as the Middle San Pitch River. The TMDL was approved by the U.S. EPA and adopted by rule into the Utah Administrative Code R317-1-7.32 on November 18th, 2003. (UAC R317-1-7, 2012).

C. FACTS

1. **Ephraim** owns and operates a municipal wastewater treatment facility in Sanpete County, Utah.

2. **Ephraim** has coverage under the General Operating Permit for Non-Discharging Wastewater Lagoons . (No. UTOP00114) (**Permit**), which governs the operation of non-discharging treatment facilities.

3. The State of Utah developed the San Pitch River **TMDL** to address the agricultural beneficial use impairment in the San Pitch River between Gunnison Reservoir and the UT Highway 132 road crossing in Moroni, UT; referred to as the Middle San Pitch River. The **TMDL** was approved by the U.S. EPA and adopted by rule into the Utah Administrative Code R317-1-7.32 on November 18th, 2003. (UAC R317-1-7, 2012). It does appear however, that the study identifies this stretch as not qualifying for the 303(d) listing, as the "surface water tributaries in this reach do not flow into the San Pitch River". (page 31). Yet it appears that the state may have never took the measures to follow through on this finding and therefore, the middle Sanpitch is still listed as impaired.

4. Total Dissolved Solids (**TDS**) concentrations fluctuate seasonally in the Middle San Pitch River with exceedances of the State water quality standards during the critical season of March 1 through September 30. The **TMDL** determined that natural geologic sources, irrigation management practices, and excessive stream bank erosion contribute to the impairment. To achieve the **TDS** endpoint of 1,200 mg/L total dissolved solids, a load reduction of 5,174 tons is needed between March 1st and September 30th by improving irrigation management and implementing stream bank stabilization projects. The **TMDL** reserved no **TDS** load allocation for an **Ephraim** discharge during the critical season between March 1 and September 30.

5. **Ephraim's** engineer, Robert Worley of Sunrise Engineering, requested information from DWQ regarding the feasibility and potential water quality limits for a possible discharge from the Ephraim Wastewater Treatment Facility to the San Pitch River. Mr. Worley's request was made because Ephraim's waste water master plan, which was approved by DWQ, identified discharge to the Sanptich River as part of a preferred alternative. On August 3, 2010, John Kennington (**DWQ** Staff) responded to Mr. Worley in a letter stating that it would not be feasible for **Ephraim** to implement a new discharge to the San Pitch River, as it would violate the **TMDL**. However, that directive was erroneously

given by DWQ because discharge was in fact feasible to the San Pitch River from October 1 through February 28.

6. On July 7, 2010 – Ephraim met with **DWQ** on the use of Resource West regarding mine water evaporators as a proposed method for disposing of lagoon effluent. **DWQ** indicated those evaporators could not be permitted. These could allow aerosolized pathogens to be blown over the city.

7. In February 2011 Ephraim City reached final completion of the City waste water master plan which recommended the preferred alternative would be to discharge to land.

8. On March 2, 2011, **Ephraim** submitted to **DWQ** a **Facility Plan** for the construction of a land application system utilizing funding from a **State** loan.

9. On April 18, 2011, **Ephraim** submitted a proposal to the **BOARD** for the land application project. **Ephraim** was utilizing Sunrise Engineering as its engineer.

10. On April 26, 2011, Regan Bolli of **Ephraim** emailed DWQ that the city may have an emergency discharge situation because of the wetter than normal spring and slow warming trend. To address this issue, Ephraim indicated its preferred option is to discharge raw wastewater into the old city lagoon as had previously been allowed by DWQ.

11. On May 2, 2011, John Cook, Woody Campbell, and John Chartier (**DWQ** Staff) visited the old lagoon site at the request of **Ephraim**. By May 3, 2011, John Cook sent guidance outlining what **Ephraim** needed to submit for an emergency discharge. **DWQ** recommended emergency land application of effluent instead of discharging raw wastewater into the old lagoon cell or discharging into the river. **DWQ** informed **Ephraim** that if it wants to do disposal in the old lagoon, it should pump from the last cell of the lagoon instead. . However, the recommended emergency land application was not feasible due to available land being flooded by snow runoff and a high water table.

12. Between May 5 and about May 13, 2011, **Ephraim** determined it would not overtop its lagoons in 2011. John Cook recommended to **Ephraim** it should still apply for the emergency land application in case the project is delayed.

13. On May 18, 2011, **Ephraim's** land application system was introduced to the **BOARD**. The original construction schedule estimate, when presented to the **BOARD**, included the deadlines below:

    i. Complete Project Design – September 2011
    ii. Design Review – November 2011
    iii. Issue Construction Permit – November 2011
    iv. Advertise for Bids – November 2011
    v. Open Bids – December 2011
    vi. Loan Closing – January 2012

vii. Begin Construction – February 2012
viii. Complete Construction – June 2012

14. On June 22, 2011, the **BOARD** authorized **Ephraim's** loan for the land application system. At that time, Ephraim was still using Sunrise Engineering as its engineering firm.

15. By August 23, 2011 – Shortly after the loan was authorized by the BOARD, Ephraim pursued design services by RFP for design and construction of the land application system. By August 31, 2011 the City had contracted with Jones & DeMille for design of the project. On November 1, 2011 John Cook of **DWQ** verified **Ephraim's** lagoon capacity calculations.

16. Part I.B.1. of the **Permit** addresses emergency discharge to Waters of the State: "The discharge of water from emergency overflow systems shall occur only as a result of equipment failure and the need to protect the plant from flooding and/or to prevent severe property damage and will be allowed only if the facility has been properly operated and maintained. If such a discharge occurs, whenever possible the permittee shall dispose of the overflow on land to avoid any potential impacts on receiving water." However, after carefully reviewing the situation with the consulting engineer, it was determined that discharge to land was not an option because of the lack of available storage and seepage on the potential land to discharge the amount of water needed. This was due to saturated ground conditions from the presence of full flowing ditches and overland flows across the property and the high ground water level.

17. On January 30, 2012, **Ephraim** submitted a letter requesting an emergency discharge permit for the **Ephraim** lagoons, indicating in that letter that it would likely need to start discharging by February 29, 2012 or risk overtopping the lagoons.

18. DWQ took nearly one month to process Ephraim's request for an emergency discharge permit and on February 24, 2012 granted the request.

19. On February 24, 2012 Ephraim City and DWQ staff had a telephone conference wherein it was decided that due to the TMDL limits on the Sanpitch River that go into effect on March 1st, of each year, the best course of action was to immediately begin discharge into waters of the state to avoid overtopping and failure of lagoon embankments and to limit **Ephraim's** potential liability to downstream users for an unpermitted discharge. Ephraim notified DWQ staff of the discharge and that this discharge was terminated on February 29, 2012.

20. On March 9, 2012, **Ephraim** submitted a report to the **EXECUTIVE SECRETARY** on the activities leading up to the discharge. This report included a timeline of activities leading up to the discharge, including steps taken to address capacity problems, planning development, purchasing land, securing funding, and retaining a consultant etc.

21. The parties agree that all wastewater discharged met or exceeded the water quality requirements set forth in R317-1-3.While the parties agree that the February 2012 discharge was done under emergency conditions pursuant to Part I.B.1 of the **Permit**, there is disagreement over whether the criteria of that provision was met and whether the discharge would be considered an illegal discharge of a pollutant into a Water of the State in violation of Utah Code Ann. § 19-5-107(1)(A). In lieu of a Notice of Violation, the parties are entering into this agreement.

D. STIPULATION

1. The parties agree that the **BOARD** has jurisdiction over this matter and the **EXECUTIVE SECRETARY** shall administer the **CONSENT AGREEMENT**.

2. For the February 2012 discharge, Ephraim agrees to pay a stipulated penalty to DWQ in the total amount of $3,000.00, representing $500.00 for each day that Ephraim discharged to a Water of the State beginning February 24, 2012 through February 29, 2012. Such penalty represents a Category D penalty pursuant to the penalty provisions set for in Utah Admin. Code R317-1-8.

3. **Ephraim** shall pay stipulated penalties to **DWQ** in the event that **Ephraim** fails to meet the deadlines established by the **CONSENT AGREEMENT**. Amounts payable under this provision shall be $200 per calendar day. These deadlines are detailed in Attachment A.

4. Ephraim shall notify the **EXECUTIVE SECRETARY** in writing of each discharge to Waters of the State (other than to land) event from the Ephraim wastewater lagoon system; providing beginning and ending date and hour. This notification shall be provided to the **EXECUTIVE SECRETARY** within 5 working days of the cessation of a discharge event.

   Ephraim shall notify the **EXECUTIVE SECRETARY** in writing of the commencement of discharge to land; providing the beginning and ending date. This notification shall be provided to the **EXECUTIVE SECRETARY** within 5 working days of the cessation of the land disposal event.

   Future discharges in violation of a UPDES Permit, Ground Water Permit, Operating Permit, or an approval to discharge to ground water, but which violates the effluent limits set forth in the permit(s) or approval, amounts payable under this provision shall be $500.00 per calendar day.

   Discharges to land in accordance with the emergency provisions of the **Permit** shall carry no penalty.

   Payment of stipulated penalties under this **CONSENT AGREEMENT** shall be made within 30 days of notice from the **EXECUTIVE SECRETARY**

5. In the event **Ephraim** is not able to meet the dates required by this **CONSENT AGREEMENT** for reasons beyond **Ephraim's** control, or by delays caused by **DWQ**, **Ephraim** shall submit, in writing, a request for extending a deadline along with any documentation or evidence of such to the **EXECUTIVE SECRETARY** and upon approval of the **EXECUTIVE SECRETARY** the dates shall be extended for a reasonable time.

6. In the event that **Ephraim** fails to meet the requirements of Part E below, the **EXECUTIVE SECRETARY** may terminate the **CONSENT AGREEMENT** by giving **Ephraim** written notice. The termination is effective thirty (30) calendar days after the date of receipt of written notice. This **CONSENT AGREEMENT** shall become effective upon execution by **Ephraim** and the **EXECUTIVE SECRETARY**.

7. Nothing in this **CONSENT AGREEMENT** shall constitute or be construed as a waiver by the State of its right to initiate enforcement action, including civil penalties, against **Ephraim** in the event of future noncompliance with the **ACT**, nor shall the State be precluded in any way from taking appropriate action, to abate an imminent endangerment to public health or the environment should such a situation arise at **Ephraim**'s facilities. Nothing in this **CONSENT AGREEMENT** shall constitute or be construed as a release from any claim, to include natural resource claims, cause of action, or demand in law or equity, which the **State** and **Ephraim** may have against each other or any person, firm, partnership, or corporate liability arising out of or relating in any way to the release of pollutants to waters of the State.

E. CONSENT AGREEMENT

Ephraim hereby agrees to comply with the following:

1. On or before (date), **Ephraim** will pay the Stipulated $3,000 penalty detailed in Paragraph D.2.

2. Submit to the **EXECUTIVE SECRETARY** for his approval within 30 days of the effective date of this **CONSENT AGREEMENT**, a report of what steps (other than a surface discharge) **Ephraim** plans to take over the summer (2012) to reduce the levels in the lagoon cells to prevent an unpermitted discharges and or overtopping of the lagoon cells.

3. This **CONSENT AGREEMENT** will remain in effect until all measures have been completed to the satisfaction of the **EXECUTIVE SECRETARY.** At which point the **EXECUTIVE SECRETARY** will close out the **CONSENT AGREEMENT** in writing.

Dated this _____ day of _____, 2012.
Ephraim City Corporation

By: _____

David Parrish
Mayor
Utah Water Quality Board

By: _____

Walter L. Baker, P. E.
Executive Secretary

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ATTACHMENT A

SCHEDULE OF COMPLANCE FOR DOCKET NUMBER XXX12-XX
STIPULATION AND CONSENT

APPENDIX B

ALTERNATIVE 2A-EXHIBIT 1

Table B1. Water Balance Model for Design Flow

Facultative Lagoons with Discharge to San Pitch

	21		Initial Population (2011)		1.305	MGD
Number of Years=	6.25%	@ 70 gpcd	3018		4.0037	ac-ft/day
Student Growth Rate=	4.50%	@ 70 gpcd	3117	Ave. Daily Flow =	0.0000005	cm/sec
Resident Growth Rate =	62.00	Acres		Hydraulic Conductivity=	5.00	feet
Primary Cells =				Initial Depth (October 1)=		

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	124.11	1.24	3.81	2.82	96.29	1.55	6.553	6.000	34.29
NOV	30	120.11	1.03	0.00	3.27	108.54	1.75	7.751	6.000	108.54
DEC	31	124.11	0.99	0.00	3.38	111.77	1.80	7.803	6.000	111.77
JAN	31	124.11	1.02	0.00	3.38	111.93	1.81	7.805	6.000	111.93
FEB	28	112.10	1.12	0.00	3.05	102.12	1.65	7.647	6.000	102.12
MAR	31	124.11	1.39	0.00	3.38	113.84	1.84	7.836	6.000	113.84
APR	30	120.11	1.31	5.10	3.27	83.64	1.35	7.349	6.000	83.64
MAY	31	109.22	1.28	7.23	3.38	61.02	0.98	6.984	6.000	61.02
JUN	30	105.70	0.83	8.70	3.27	48.14	0.78	6.776	6.000	48.14
JUL	31	109.22	0.75	9.65	3.38	45.78	0.74	6.738	6.000	45.78
AUG	31	109.22	0.89	8.26	3.38	53.69	0.87	6.866	6.000	53.69
SEP	30	120.11	1.03	6.03	3.27	77.38	1.25	7.248	6.000	77.38
TOTALS		1402.24	12.88	48.78	39.22	1014.14				952.14

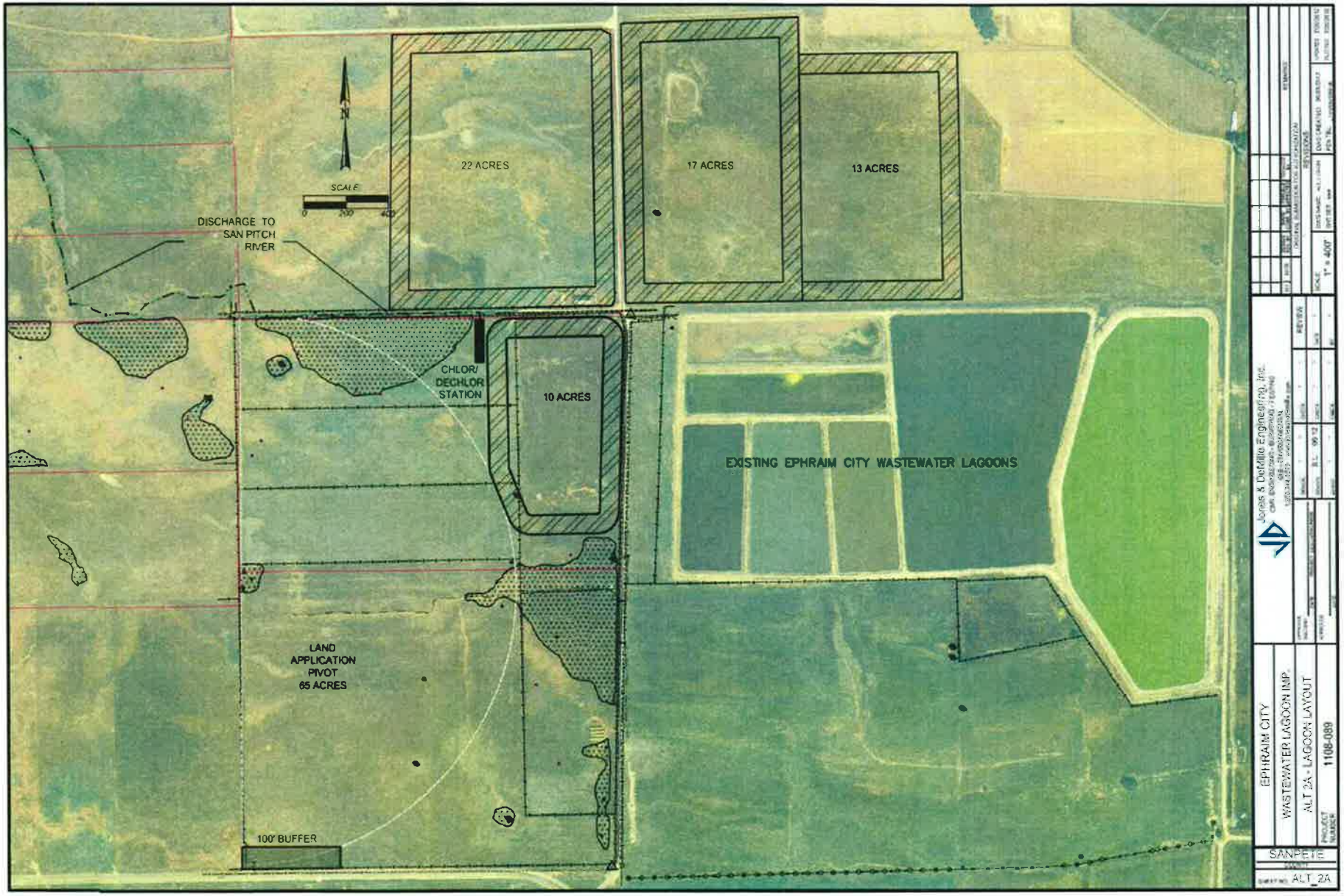
Secondary Cells =	10.3	Acres		Discharge Flow Rate =	3	cfs

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	34.29	1.24	3.81	2.82	29.67	2.88	7.880	6.000	19.37
NOV	30	108.54	1.03	0.00	3.27	106.62	10.35	16.351	6.000	106.62
DEC	31	111.77	0.99	0.00	3.38	109.72	10.65	16.653	6.000	109.72
JAN	31	111.93	1.02	0.00	3.38	109.90	10.67	16.670	6.000	109.90
FEB	28	102.12	1.12	0.00	3.05	100.46	9.75	15.754	6.000	100.46
MAR	31	113.84	1.39	0.00	3.38	112.13	10.89	16.887	6.000	112.13

APR	30	83.64	1.31	5.10	3.27	77.58	7.53	13.532	6.000	77.58
MAY	31	61.02	1.28	7.23	3.38	53.01	5.15	11.147	6.000	53.01
JUN	30	48.14	0.83	8.70	3.27	38.58	3.75	9.746	6.000	38.58
JUL	31	45.78	0.75	9.65	3.38	35.24	3.42	9.421	6.000	35.24
AUG	31	53.69	0.89	8.26	3.38	44.46	4.32	10.316	6.000	44.46
SEP	30	77.38	1.03	6.03	3.27	70.29	6.82	12.824	6.000	70.29
TOTALS		952.14	12.88	48.78	39.22	887.66				877.36

		Storage Cells =	60	Acres		Initial Depth = Winter storage depth =	5 12	feet feet	Hydraulic Cond.=	0.0000005	cm/sec	
MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)	DETENTION TIME (DAYS)	UTAH CODE
OCT	31	19.37	1.24	3.81	2.82	-7.56	-0.13	4.874	4.874	0.00	181	GOOD
NOV	30	106.62	1.03	0.00	2.66	98.49	1.64	6.515	6.515	0.00	206	GOOD
DEC	31	109.72	0.99	0.00	3.67	-88.13	-1.47	5.046	5.046	184.46	184	GOOD
JAN	31	109.90	1.02	0.00	2.84	-83.67	-1.39	3.652	3.652	184.46	163	GOOD
FEB	28	100.46	1.12	0.00	1.86	-69.83	-1.16	2.488	2.488	166.61	146	BAD
MAR	31	112.13	1.39	0.00	1.40	112.08	1.87	4.356	4.356	0.00	174	GOOD
APR	30	77.58	1.31	5.10	2.37	46.76	0.78	5.135	5.135	0.00	185	GOOD
MAY	31	53.01	1.28	7.23	2.89	8.81	0.15	5.282	5.282	0.00	188	GOOD
JUN	30	38.58	0.83	8.70	2.88	-15.16	-0.25	5.029	5.029	0.00	184	GOOD
JUL	31	35.24	0.75	9.65	2.83	-23.42	-0.39	4.639	4.639	0.00	178	GOOD
AUG	31	44.46	0.89	8.26	2.61	-5.45	-0.09	4.548	4.548	0.00	177	GOOD
SEP	30	70.29	1.03	6.03	2.48	32.89	0.55	5.096	5.096	0.00	185	GOOD
TOTALS		877.36	12.88	48.78	31.31	5.79						Discharge Period

ALTERNATIVE 2A-EXHIBIT 2



ALTERNATIVE 2A-EXHIBIT 3

JONES & DEMILLE ENGINEERING, INC.
1535 SOUTH 100 WEST
RICHFIELD UT 84701

ENGINEER'S OPINION OF PROBABLE COST

PROJECT: Ephraim City Wastewater Capital Facilities Plan
Alternative 2A Facultative Lagoon Treatment with Seasonal Discharge
OWNER: Ephraim City

PROJ #: 1108-089
DATE: November 7, 2012
SHEET: Alt. 2A
BY: TCH / DR

ITEM #	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	Mobilization	1	L.S.	$115,000.00	$115,000.00
2	Replace Existing Lagoon Transfer Structure	3	Each	$15,000.00	$45,000.00
3	Disinfection and Pump Building	1	L.S.	$60,000.00	$60,000.00
4	HVAC	1	L.S.	$12,000.00	$12,000.00
5	Electrical	1	L.S.	$15,000.00	$15,000.00
6	Disinfection Equipment (chlor/dechlor)	1	L.S.	$12,000.00	$12,000.00
7	3-Phase Power	4100	ft	$25.00	$102,500.00
8	SCADA	1	L.S.	$20,000.00	$20,000.00
9	20" dia. PVC sewer and discharge lines	1300	ft	$50.00	$65,000.00
10	Manhole	2	Each	$3,500.00	$7,000.00
11	54" dia. Chlorine Contact Pipe	340	ft	$190.00	$64,600.00
12	54" Reducers & saddles	1	L.S.	$15,000.00	$15,000.00
13	60 acre Winter Storage Lagoon Dike Compacted Embankment	280800	CU. YD	$5.00	$1,404,000.00
14	Removal of Secondary Dikes	31000	CU. YD	$6.00	$186,000.00
15	Piping for new primary cell	1600	L.F.	$50.00	$80,000.00
16	Lagoon Terminal Outlet Structure	1	Each	$15,000.00	$15,000.00
17	Lagoon Transfer Structure w/inlet & outlet pipe	2	Each	$13,000.00	$26,000.00
18	Lagoon Inlet and Outlet Pipe Concrete Cradle	240	L.F.	$50.00	$12,000.00
19	Lagoon Inlet and Outlet Pipe Cut-off wall	12	Each	$500.00	$6,000.00
20	Chainlink Fence	13490	L.F.	$22.00	$296,780.00
21	Construction Contingency	1	L.S.	$255,888.00	$255,888.00
	TOTAL CONSTRUCTION ESTIMATED COST				**$2,814,768.00**
	R/W, Easements, property survey:				$10,000.00
	City Legal & City Administration:				$38,000.00
	Additional Land Acquisition:	75	acre	$3,500.00	$262,500.00
	Environmental/Permitting:				$20,000.00
	Design Engineering:				$212,000.00
	Construction Engineering:				$140,000.00
	PROJECT TOTAL				**$3,497,268.00**

APPENDIX C

ALTERNATIVE 3A-EXHIBIT 1

Table C1. Water Balance Model for Design Flow

Aerated Lagoons with Discharge to San Pitch

Number of Years=	21		Initial Population (2011)		1.305	MGD
Student Growth Rate=	6.25%	@ 70 gpcd	3018	Ave. Daily Flow =	4.0037	ac-ft/day
Resident Growth Rate =	4.50%	@ 70 gpcd	3117	Hydraulic Conductivity=	0.0000005	cm/sec
Primary Cells =	62.00	Acres		Initial Depth (October 1)=	5.00	feet

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	124.11	1.24	3.81	2.82	96.29	1.55	6.553	6.000	34.29
NOV	30	120.11	1.03	0.00	3.27	108.54	1.75	7.751	6.000	108.54
DEC	31	124.11	0.99	0.00	3.38	111.77	1.80	7.803	6.000	111.77
JAN	31	124.11	1.02	0.00	3.38	111.93	1.81	7.805	6.000	111.93
FEB	28	112.10	1.12	0.00	3.05	102.12	1.65	7.647	6.000	102.12
MAR	31	124.11	1.39	0.00	3.38	113.84	1.84	7.836	6.000	113.84
APR	30	120.11	1.31	5.10	3.27	83.64	1.35	7.349	6.000	83.64
MAY	31	109.22	1.28	7.23	3.38	61.02	0.98	6.984	6.000	61.02
JUN	30	105.70	0.83	8.70	3.27	48.14	0.78	6.776	6.000	48.14
JUL	31	109.22	0.75	9.65	3.38	45.78	0.74	6.738	6.000	45.78
AUG	31	109.22	0.89	8.26	3.38	53.69	0.87	6.866	6.000	53.69
SEP	30	120.11	1.03	6.03	3.27	77.38	1.25	7.248	6.000	77.38
TOTALS		1402.24	12.88	48.78	39.22	1014.14				952.14

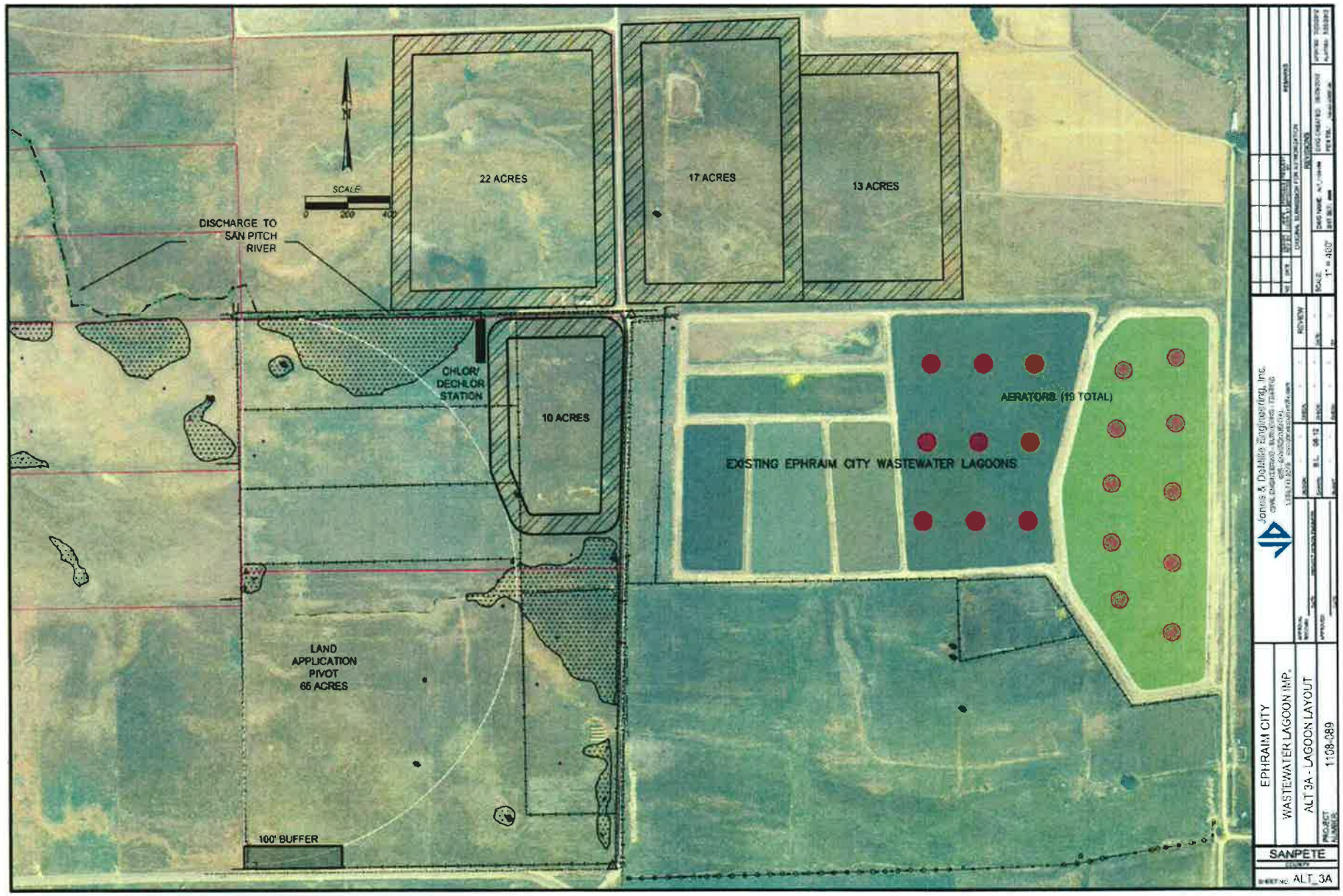
Secondary Cells =	10.3	Acres		Discharge =	3	cfs

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	34.29	1.24	3.81	2.82	29.67	2.88	7.880	6.000	19.37
NOV	30	108.54	1.03	0.00	3.27	106.62	10.35	16.351	6.000	106.62
DEC	31	111.77	0.99	0.00	3.38	109.72	10.65	16.653	6.000	109.72
JAN	31	111.93	1.02	0.00	3.38	109.90	10.67	16.670	6.000	109.90
FEB	28	102.12	1.12	0.00	3.05	100.46	9.75	15.754	6.000	100.46

MAR	31	113.84	1.39	0.00	3.38	112.13	10.89	16.887	6.000	112.13
APR	30	83.64	1.31	5.10	3.27	77.58	7.53	13.532	6.000	77.58
MAY	31	61.02	1.28	7.23	3.38	53.01	5.15	11.147	6.000	53.01
JUN	30	48.14	0.83	8.70	3.27	38.58	3.75	9.746	6.000	38.58
JUL	31	45.78	0.75	9.65	3.38	35.24	3.42	9.421	6.000	35.24
AUG	31	53.69	0.89	8.26	3.38	44.46	4.32	10.316	6.000	44.46
SEP	30	77.38	1.03	6.03	3.27	70.29	6.82	12.824	6.000	70.29
TOTALS		952.14	12.88	48.78	39.22	887.66				877.36

		Storage Cells =	**60**	**Acres**		**Initial Depth = Winter storage depth =**	**5** feet **12**	feet	**Hydraulic Cond.=**	**0.0000005**	cm/sec	
MONTH	**DAYS PER MONTH**	**INFLOW** *(AC. FT.)*	**PRECIP.** *(INCH)*	**EVAP.** *(INCH)*	**SEEPAGE** *(INCH)*	**NET INFLOW** *(AC. FT.)*	**CHANGE IN POND DEPTH** *(FEET)*	**CALCULATED POND DEPTH** *(FEET)*	**FINAL POND DEPTH** *(FEET)*	**OUTFLOW** *(AC. FT.)*	**DETENTION TIME** *(DAYS)*	**UTAH CODE**
OCT	31	19.37	1.24	3.81	2.82	-7.56	-0.13	4.874	4.874	0.00	181	GOOD
NOV	30	106.62	1.03	0.00	2.66	98.49	1.64	6.515	6.515	0.00	206	GOOD
DEC	31	109.72	0.99	0.00	3.67	-88.13	-1.47	5.046	5.046	184.46	184	GOOD
JAN	31	109.90	1.02	0.00	2.84	-83.67	-1.39	3.652	3.652	184.46	163	GOOD
FEB	28	100.46	1.12	0.00	1.86	-69.83	-1.16	2.488	2.488	166.61	146	GOOD
MAR	31	112.13	1.39	0.00	1.40	112.08	1.87	4.356	4.356	0.00	174	GOOD
APR	30	77.58	1.31	5.10	2.37	46.76	0.78	5.135	5.135	0.00	185	GOOD
MAY	31	53.01	1.28	7.23	2.89	8.81	0.15	5.282	5.282	0.00	188	GOOD
JUN	30	38.58	0.83	8.70	2.88	-15.16	-0.25	5.029	5.029	0.00	184	GOOD
JUL	31	35.24	0.75	9.65	2.83	-23.42	-0.39	4.639	4.639	0.00	178	GOOD
AUG	31	44.46	0.89	8.26	2.61	-5.45	-0.09	4.548	4.548	0.00	177	GOOD
SEP	30	70.29	1.03	6.03	2.48	32.89	0.55	5.096	5.096	0.00	185	GOOD
TOTALS		877.36	12.88	48.78	31.31	5.79						

ALTERNATIVE 3A-EXHIBIT 2



ALTERNATIVE 3A-EXHIBIT 3

JONES & DEMILLE ENGINEERING, INC.
1535 SOUTH 100 WEST
RICHFIELD UT 84701

ENGINEER'S OPINION OF PROBABLE COST

PROJECT: Ephraim City Wastewater Capital Facilities Plan
Alt. 3A Discharge to San Pitch w/ Aeration
OWNER:

PROJ #: 1108-089
DATE: November 7, 2012
SHEET: Alt. 3A
BY: TCH / DR

ITEM #	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	Mobilization	1	L.S.	$118,000.00	$118,000.00
2	Replace Existing Lagoon Transfer Structure	3	Each	$15,000.00	$45,000.00
3	Existing Primary Cell Aerators w/power	19	Each	$15,000.00	$285,000.00
4	Disinfection and Pump Building	1	L.S.	$70,000.00	$70,000.00
5	HVAC	1	L.S.	$12,000.00	$12,000.00
5	Electrical	1	L.S.	$15,000.00	$15,000.00
6	Disinfection Equipment (chlor/dechlor)	1	L.S.	$12,000.00	$12,000.00
7	3-Phase Power	4100	ft	$25.00	$102,500.00
8	SCADA	1	L.S.	$20,000.00	$20,000.00
9	20" dia. PVC sewer and discharge lines	1300	ft	$40.00	$52,000.00
10	Manhole	2	Each	$3,500.00	$7,000.00
11	54" dia. Chlorine Contact Pipe	340	ft	$190.00	$64,600.00
12	54" Reducers & saddles	1	L.S.	$15,000.00	$15,000.00
13	60 acre Winter Storage Lagoon Dike Compacted Embankment	280800	CU. YD	$5.00	$1,404,000.00
14	Removal of Secondary Dikes	31000	CU. YD	$6.00	$186,000.00
15	Piping for new primary cell	1600	L.F.	$50.00	$80,000.00
16	Winter Storage Lagoon Terminal Outlet Structure	1	Each	$15,000.00	$15,000.00
17	Winter Storage Lagoon Transfer Structure w/inlet & outlet pipe	2	Each	$13,000.00	$26,000.00
18	Winter Storage Lagoon Inlet and Outlet Pipe Concrete Cradle	160	L.F.	$50.00	$8,000.00
19	Winter Storage Lagoon Inlet and Outlet Pipe Cut-off wall	8	Each	$500.00	$4,000.00
20	Chainlink Fence	13490	L.F.	$22.00	$296,780.00
21	Construction Contingency	1	L.S.	$283,788.00	$283,788.00
	TOTAL CONSTRUCTION ESTIMATED COST				**$3,121,668.00**
	R/W, Easements, property survey:				$10,000.00
	City Legal & City Administration:				$40,000.00
	Additional Land Acquisition:	75	acre	$3,500.00	$262,500.00
	Environmental/Permitting:				$20,000.00
	Design Engineering:				$225,000.00
	Construction Engineering:				$140,000.00
	PROJECT TOTAL				**$3,819,168.00**

APPENDIX D

ALTERNATIVE 7-EXHIBIT 1

Table D1. Water Balance Model for Design Flow

Facultative Lagoons with Discharge to San Pitch and Land Application

Number of Years=	21		Initial Population (2011)		1.305	MGD
Student Growth Rate=	6.25%	@ 70 gpcd	3018	Ave. Daily Flow =	4.0037	ac-ft/day
Resident Growth Rate =	4.50%	@ 70 gpcd	3117	Hydraulic Cond.=	0.0000005	cm/sec
Primary Cells =	62.00	Acres		Initial Depth (October 1)=	5.00	feet

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	124.11	1.24	3.81	2.82	96.29	1.55	6.553	6.000	34.29
NOV	30	120.11	1.03	0.00	3.27	108.54	1.75	7.751	6.000	108.54
DEC	31	124.11	0.99	0.00	3.38	111.77	1.80	7.803	6.000	111.77
JAN	31	124.11	1.02	0.00	3.38	111.93	1.81	7.805	6.000	111.93
FEB	28	112.10	1.12	0.00	3.05	102.12	1.65	7.647	5.000	164.12
MAR	31	124.11	1.39	0.00	2.82	116.75	1.88	6.883	6.000	54.75
APR	30	120.11	1.31	5.10	3.27	83.64	1.35	7.349	6.000	83.64
MAY	31	109.22	1.28	7.23	3.38	61.02	0.98	6.984	6.000	61.02
JUN	30	105.70	0.83	8.70	3.27	48.14	0.78	6.776	6.000	48.14
JUL	31	109.22	0.75	9.65	3.38	45.78	0.74	6.738	6.000	45.78
AUG	31	109.22	0.89	8.26	3.38	53.69	0.87	6.866	6.000	53.69
SEP	30	120.11	1.03	6.03	3.27	77.38	1.25	7.248	6.000	77.38
TOTALS		1402.24	12.88	48.78	38.65	1017.04				955.04

Secondary Cells =	10.3	*acres*	Discharge =	3	*cfs*	

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	34.29	1.24	3.81	2.82	29.67	2.88	7.880	6.000	19.37
NOV	30	108.54	1.03	0.00	3.27	106.62	10.35	16.351	6.000	106.62
DEC	31	111.77	0.99	0.00	3.38	109.72	10.65	16.653	6.000	109.72
JAN	31	111.93	1.02	0.00	3.38	109.90	10.67	16.670	6.000	109.90

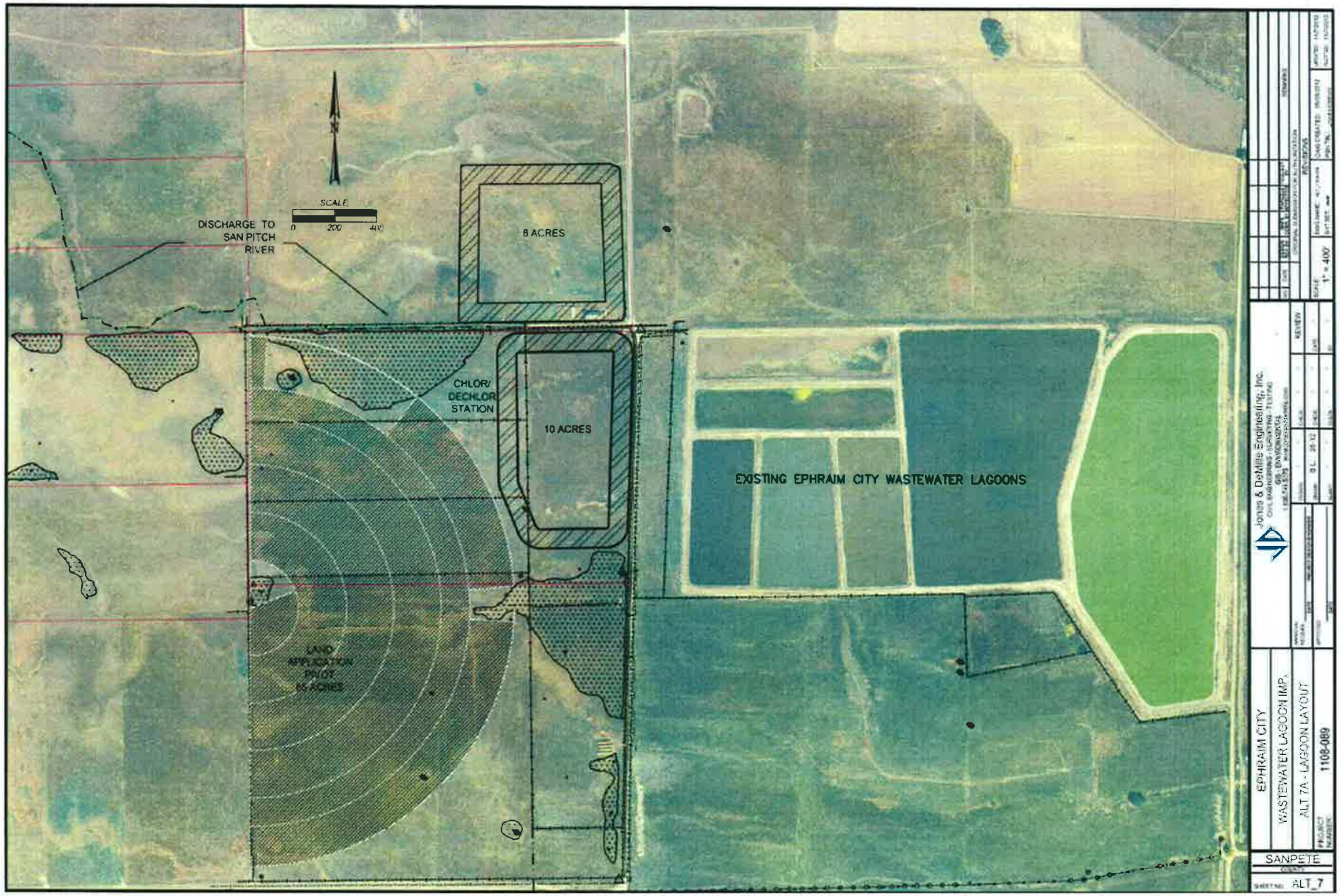
FEB	28	164.12	1.12	0.00	3.05	162.46	15.77	21.773	5.000	172.76
MAR	31	54.75	1.39	0.00	2.82	53.52	5.20	10.197	6.000	43.22
APR	30	83.64	1.31	5.10	3.27	77.58	7.53	13.532	6.000	77.58
MAY	31	61.02	1.28	7.23	3.38	53.01	5.15	11.147	6.000	53.01
JUN	30	48.14	0.83	8.70	3.27	38.58	3.75	9.746	6.000	38.58
JUL	31	45.78	0.75	9.65	3.38	35.24	3.42	9.421	6.000	35.24
AUG	31	53.69	0.89	8.26	3.38	44.46	4.32	10.316	6.000	44.46
SEP	30	77.38	1.03	6.03	3.27	70.29	6.82	12.824	6.000	70.29
TOTALS		955.04	12.88	48.78	38.65	891.05				880.75

							65	acres					
						Land Application =	**5**	feet					
		Storage Cells =	**18**	**Acres**		**Initial Depth =**			**Hydraulic**				
						Winter storage depth =	**12**	feet	**Cond.=**	**0.0000005**	**cm/sec**		
MONTH	**DAYS PER MONTH**	**INFLOW *(AC. FT.)***	**LAND APPLICATION *(AC. FT)***	**PRECIP. *(INCH)***	**EVAP. *(INCH)***	**SEEPAGE *(INCH)***	**NET INFLOW *(AC. FT.)***	**CHANGE IN POND DEPTH *(FEET)***	**CALCULATED POND DEPTH *(FEET)***	**FINAL POND DEPTH *(FEET)***	**OUTFLOW *(AC. FT.)***	**DETENTION TIME *(DAYS)***	**UTAH CODE**
OCT	31	19.37	15.98	1.24	3.81	2.82	-4.69	-0.26	4.739	4.739	0.00	134	GOOD
NOV	30	106.62	0.00	1.03	0.00	2.58	104.29	5.79	10.533	10.533	0.00	182	GOOD
DEC	31	109.72	0.00	0.99	0.00	5.93	-82.15	-4.56	5.969	5.969	184.46	163	GOOD
JAN	31	109.90	0.00	1.02	0.00	3.36	-78.07	-4.34	1.632	1.632	184.46	143	GOOD
FEB	28	172.76	0.00	1.12	0.00	0.83	6.59	0.37	1.998	1.998	166.61	142	GOOD
MAR	31	43.22	8.13	1.39	0.00	1.12	35.50	1.97	3.970	3.970	0.00	137	GOOD
APR	30	77.58	20.85	1.31	5.10	2.16	47.79	2.66	6.625	6.625	0.00	158	GOOD
MAY	31	53.01	30.39	1.28	7.23	3.73	8.11	0.45	7.075	7.075	0.00	153	GOOD
JUN	30	38.58	38.08	0.83	8.70	3.86	-17.09	-0.95	6.126	6.126	0.00	146	GOOD
JUL	31	35.24	44.53	0.75	9.65	3.45	-27.81	-1.54	4.581	4.581	0.00	138	GOOD
AUG	31	44.46	43.66	0.89	8.26	2.58	-14.12	-0.78	3.796	3.796	0.00	137	GOOD
SEP	30	70.29	35.91	1.03	6.03	2.07	23.77	1.32	5.117	5.117	0.00	149	GOOD
TOTALS		880.75	237.52	12.88	48.78	34.49	2.11						
			43.85	in.									

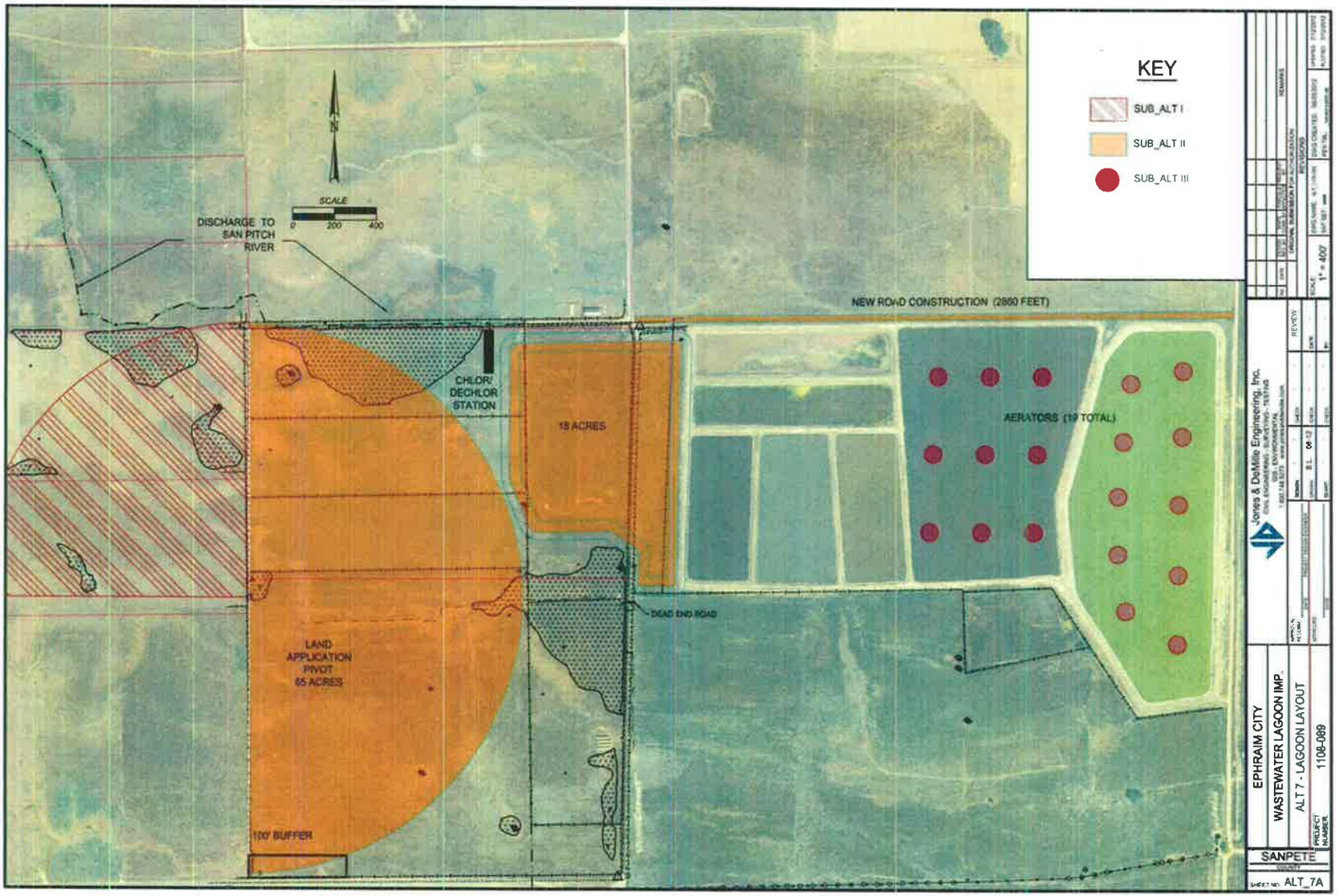
= land application

= discharge period

ALTERNATIVE 7-EXHIBIT 2



ALTERNATIVE 7-EXHIBIT 3



ALTERNATIVE 7-EXHIBIT 4

JONES & DEMILLE ENGINEERING, INC.
1535 SOUTH 100 WEST
RICHFIELD UT 84701

ENGINEER'S OPINION OF PROBABLE COST

PROJECT: Ephraim City Wastewater Capital Facilities Plan
Alternative 7 Land Application and Seasonal Discharge to San Pitch River
OWNER: Ephraim City

PROJ #: 1108-089
DATE: November 7, 2012
SHEET: Alt. 7
BY: TCH / DR

ITEM #	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	Mobilization	1	L.S.	$70,000.00	$70,000.00
2	Replace Existing Lagoon Transfer Structure	3	Each	$15,000.00	$45,000.00
3	Disinfection and Pump Building	1	L.S.	$60,000.00	$60,000.00
4	HVAC	1	L.S.	$12,000.00	$12,000.00
5	Electrical	1	L.S.	$15,000.00	$15,000.00
6	Disinfection Equipment (chlor/dechlor)	1	L.S.	$9,000.00	$9,000.00
7	Pump & Miscelaneous Equipment	1	L.S.	$12,000.00	$12,000.00
8	3-Phase Power	4100	ft	$25.00	$102,500.00
9	SCADA	1	L.S.	$22,000.00	$22,000.00
10	20" PVC sewer and discharge lines	2250	ft	$50.00	$112,500.00
11	Manhole	4	Each	$3,500.00	$14,000.00
12	54" dia. Chlorine Contact Pipe	340	ft	$190.00	$64,600.00
13	54" Reducers & saddles	1	L.S.	$15,000.00	$15,000.00
14	Pivot Pipeline (10" dia.)	2200	L.F.	$24.00	$52,800.00
15	Pivot 3-phase power	2200	L.F.	$15.00	$33,000.00
16	Pivot System (1,295' radius)	1	L.S.	$85,000.00	$85,000.00
17	18 acre Winter Storage Lagoon Dike Compacted Embankment	84240	CU. YD	$5.00	$421,200.00
18	Removal of Existing Secondary Dikes	31000	CU. YD	$6.00	$186,000.00
19	Piping for new primary cell	1600	L.F.	$50.00	$80,000.00
20	Primary Cell Splitter Structure	1	L.S.	$20,000.00	$20,000.00
21	Winter Storage Lagoon Terminal Outlet Structure	1	Each	$18,000.00	$18,000.00
22	Winter Storage Lagoon Transfer Structure w/inlet & outlet pipe	1	Each	$14,000.00	$14,000.00
23	Winter Storage Lagoon Inlet and Outlet Pipe Concrete Cradle	160	L.F.	$50.00	$8,000.00
24	Winter Storage Lagoon Inlet and Outlet Pipe Cut-off wall	8	Each	$500.00	$4,000.00
25	Chainlink Fence	7120	L.F.	$22.00	$156,640.00
26	Construction Contingency	1	L.S.	$163,224.00	$163,224.00
	TOTAL CONSTRUCTION ESTIMATED COST				**$1,795,464.00**
	R/W, Easements, property survey:				$6,000.00
	City Legal & City Administration:				$22,000.00
	Additional Land Acquisition:	12	acre	$3,500.00	$42,000.00
	Environmental/Permitting:				$18,000.00
	Design Engineering:				$140,000.00
	Construction Engineering:				$108,000.00
	PROJECT TOTAL				**$2,131,464.00**

APPENDIX E

ALTERNATIVE 8-EXHIBIT 1

Table E1. Water Balance Model for Design Flow

Facultative Lagoons with Land Application

	21	Initial Population (2011)			1.305	MGD
Number of Years=	6.25%	@ 70 gpcd	3018	Ave. Daily Flow =	4.0037	ac-ft/day
Student Growth Rate=		@ 70		Hydraulic Cond.=		
Resident Growth Rate =	4.50%	gpcd	3117	Initial Depth	0.0000005	cm/sec
Primary Cells =	62.00	Acres		(October 1)=	5.00	feet

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	124.11	1.24	3.81	2.82	96.29	1.55	6.553	6.000	34.29
NOV	30	120.11	1.03	0.00	3.27	108.54	1.75	7.751	6.000	108.54
DEC	31	124.11	0.99	0.00	3.38	111.77	1.80	7.803	6.000	111.77
JAN	31	124.11	1.02	0.00	3.38	111.93	1.81	7.805	6.000	111.93
FEB	28	112.10	1.12	0.00	3.05	102.12	1.65	7.647	6.000	102.12
MAR	31	124.11	1.39	0.00	3.38	113.84	1.84	7.836	6.000	113.84
APR	30	120.11	1.31	5.10	3.27	83.64	1.35	7.349	6.000	83.64
MAY	31	109.22	1.28	7.23	3.38	61.02	0.98	6.984	6.000	61.02
JUN	30	105.70	0.83	8.70	3.27	48.14	0.78	6.776	6.000	48.14
JUL	31	109.22	0.75	9.65	3.38	45.78	0.74	6.738	6.000	45.78
AUG	31	109.22	0.89	8.26	3.38	53.69	0.87	6.866	6.000	53.69
SEP	30	120.11	1.03	6.03	3.27	77.38	1.25	7.248	6.000	77.38
TOTALS		1402.24	12.88	48.78	39.22	1014.14				952.14

Secondary Cells =	10.3	*acres*

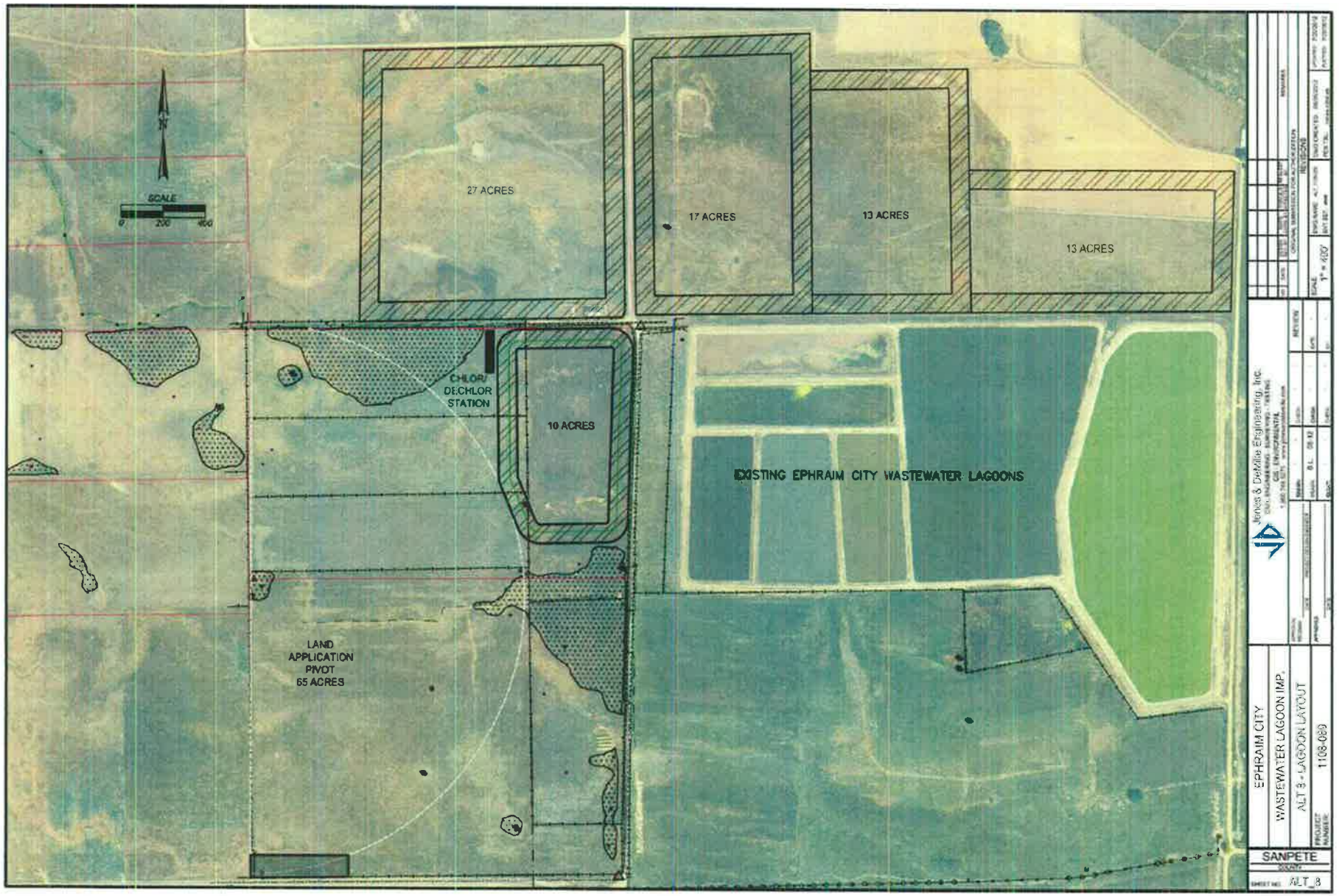
MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	OUTFLOW (AC. FT.)
OCT	31	34.29	1.24	3.81	2.82	29.67	2.88	7.880	6.000	19.37
NOV	30	108.54	1.03	0.00	3.27	106.62	10.35	16.351	6.000	106.62
DEC	31	111.77	0.99	0.00	3.38	109.72	10.65	16.653	6.000	109.72
JAN	31	111.93	1.02	0.00	3.38	109.90	10.67	16.670	6.000	109.90

FEB	28	102.12	1.12	0.00	3.05	100.46	9.75	15.754	6.000	100.46
MAR	31	113.84	1.39	0.00	3.38	112.13	10.89	16.887	6.000	112.13
APR	30	83.64	1.31	5.10	3.27	77.58	7.53	13.532	6.000	77.58
MAY	31	61.02	1.28	7.23	3.38	53.01	5.15	11.147	6.000	53.01
JUN	30	48.14	0.83	8.70	3.27	38.58	3.75	9.746	6.000	38.58
JUL	31	45.78	0.75	9.65	3.38	35.24	3.42	9.421	6.000	35.24
AUG	31	53.69	0.89	8.26	3.38	44.46	4.32	10.316	6.000	44.46
SEP	30	77.38	1.03	6.03	3.27	70.29	6.82	12.824	6.000	70.29
TOTALS		952.14	12.88	48.78	39.22	887.66				

Land Application = 65 acres
Initial Depth = 5 feet
Winter storage depth = 12 feet
Storage Cells = 80 Acres
Hydraulic Cond.= 0.0000005 cm/sec

MONTH	DAYS PER MONTH	INFLOW (AC. FT.)	LAND APPLICATION (AC. FT)	PRECIP. (INCH)	EVAP. (INCH)	SEEPAGE (INCH)	NET INFLOW (AC. FT.)	CHANGE IN POND DEPTH (FEET)	CALCULATED POND DEPTH (FEET)	FINAL POND DEPTH (FEET)	DISCHARGE OUTFLOW (AC. FT.)	DETENTION TIME (DAYS)	UTAH CODE
OCT	31	19.37	15.98	1.24	3.81	2.82	-32.52	-0.41	4.594	4.594	0.00	205	GOOD
NOV	30	106.62	0.00	1.03	0.00	2.50	96.79	1.21	5.803	5.803	0.00	251	GOOD
DEC	31	109.72	0.00	0.99	0.00	3.27	94.54	1.18	6.985	6.985	0.00	275	GOOD
JAN	31	109.90	0.00	1.02	0.00	3.93	90.48	1.13	8.116	8.116	0.00	298	GOOD
FEB	28	100.46	0.00	1.12	0.00	4.13	80.41	1.01	9.121	9.121	0.00	316	GOOD
MAR	31	112.13	8.13	1.39	0.00	5.14	79.03	0.99	10.109	10.109	0.00	338	GOOD
APR	30	77.58	20.85	1.31	5.10	5.51	-5.27	-0.07	10.043	10.043	0.00	328	GOOD
MAY	31	53.01	30.39	1.28	7.23	5.66	-54.74	-0.68	9.359	9.359	0.00	309	GOOD
JUN	30	38.58	38.08	0.83	8.70	5.10	-85.97	-1.07	8.285	8.285	0.00	284	GOOD
JUL	31	35.24	44.53	0.75	9.65	4.66	-99.72	-1.25	7.038	7.038	0.00	258	GOOD
AUG	31	44.46	43.66	0.89	8.26	3.96	-74.75	-0.93	6.104	6.104	0.00	241	GOOD
SEP	30	70.29	35.91	1.03	6.03	3.33	-21.13	-0.26	5.839	5.839	0.00	243	GOOD
TOTALS		877.36	237.52	12.88	48.78	50.00	67.16						= land application

ALTERNATIVE 8-EXHIBIT 2



ALTERNATIVE 8-EXHIBIT 3

JONES & DEMILLE ENGINEERING, INC.
1535 SOUTH 100 WEST
RICHFIELD UT 84701

ENGINEER'S OPINION OF PROBABLE COST

PROJECT: Ephraim City Wastewater Capital Facilities Plan
Alternative 8, Land Application
OWNER: Ephraim City

PROJ #: 1108-089
DATE: November 7, 2012
SHEET: Alt. 8
BY: TCH / DR

ITEM #	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	Mobilization	1	L.S.	$150,000.00	$150,000.00
2	Replace Existing Lagoon Transfer Structure	3	Each	$15,000.00	$45,000.00
3	Disinfection and Pump Building	1	L.S.	$70,000.00	$70,000.00
4	HVAC	1	L.S.	$12,000.00	$12,000.00
5	Electrical	1	L.S.	$15,000.00	$15,000.00
6	Disinfection Equipment (chlor/dechlor)	1	L.S.	$9,000.00	$9,000.00
7	3-Phase Power	4100	ft	$25.00	$102,500.00
8	Pump & Miscelaneous Equipment	1	L.S.	$18,000.00	$18,000.00
8	SCADA	1	L.S.	$20,000.00	$20,000.00
9	Pivot Pipeline (10" dia.)	2200	L.F.	$24.00	$52,800.00
10	Pivot 3-phase power	2200	L.F.	$15.00	$33,000.00
11	Pivot System (1,295' radius)	1	L.S.	$85,000.00	$85,000.00
12	20" PVC sewer and discharge lines	1600	ft	$50.00	$80,000.00
13	Manhole	5	Each	$3,500.00	$17,500.00
14	54" dia. Chlorine Contact Pipe	340	ft	$190.00	$64,600.00
15	54" Reducers & saddles	1	L.S.	$15,000.00	$15,000.00
16	80 acre Winter Storage Lagoon Dike Compacted Embankment	374400	CU. YD	$5.00	$1,872,000.00
17	Removal of Secondary Dikes	31000	CU. YD	$6.00	$186,000.00
18	Piping for new primary cell	1600	L.F.	$50.00	$80,000.00
19	Winter Storage Lagoon Terminal Outlet Structure	1	Each	$15,000.00	$15,000.00
20	Winter Storage Lagoon Transfer Structure w/inlet & outlet pipe	3	Each	$13,000.00	$39,000.00
21	Winter Storage Lagoon Inlet and Outlet Pipe Concrete Cradle	320	L.F.	$50.00	$16,000.00
22	Winter Storage Lagoon Inlet and Outlet Pipe Cut-off wall	16	Each	$500.00	$8,000.00
23	Chainlink Fence	16360	L.F.	$21.00	$343,560.00
24	Construction Contingency	1	L.S.	$334,896.00	$334,896.00
	TOTAL CONSTRUCTION ESTIMATED COST				**$3,683,856.00**
	R/W, Easements, property survey:				$9,000.00
	City Legal & City Administration:				$45,000.00
	Additional Land Acquisition:	102	acre	$3,500.00	$357,000.00
	Environmental/Permitting:				$25,000.00
	Design Engineering:				$255,000.00
	Construction Engineering:				$150,000.00
	PROJECT TOTAL				**$4,524,856.00**

APPENDIX F

EXHIBIT 1

Table F2. Mechanical Treatment Cost Comparison Analysis

City	Analysis Year	Treatment	Capital Cost	O&M/Annual Cost	Flow in 20 yrs (1000 gal)	Capital Cost/1000 gal	O&M Ann. Cost/1000 gal
Monroe, UT	2010	MBR-Type I reuse	$9,018,000.00	$394,522.00	298	$30,261.74	$1,323.90
Monroe, UT	2010	SBR-Type I reuse	$4,682,000.00	$255,218.00	298	$15,711.41	$856.44
Central Valley, UT	2011	SBR-Type I reuse	$2,705,500.00	$185,328.11	83.7	$32,323.78	$2,214.19
						25% range	
Ephraim, UT	2012	MBR-Type I reuse	$39,340,268.46	$1,721,069.13	1300	$31,472,214.77	
	2012	SBR-Type I reuse	$20,424,832.21	$1,113,367.11	1300	$16,339,865.77	

EXHIBIT 2

JONES & DEMILLE ENGINEERING, INC.
1535 SOUTH 100 WEST
RICHFIELD UT 84701

ENGINEER'S OPINION OF PROBABLE COST

PROJECT: Ephraim City Wastewater Capital Facilities Plan
Alternative 10 Total Containment
OWNER: Ephraim City

PROJ #: 1108-089
DATE: November 7, 2012
SHEET: Alt. 10
BY: TCH / DR

ITEM #	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	Mobilization	1	L.S.	$195,000.00	$195,000.00
2	Replace Existing Lagoon Transfer Structure	3	Each	$15,000.00	$45,000.00
3	20" dia. PVC Sewerline	2800	ft	$50.00	$140,000.00
4	Manhole	5	Each	$3,500.00	$17,500.00
5	54" Reducers & saddles	1	L.S.	$15,000.00	$15,000.00
6	136 acre Total Containament Lagoon Dike Compacted Embankment	636480	CU. YD	$5.00	$3,182,400.00
7	Removal of Secondary Dikes	31000	CU. YD	$6.00	$186,000.00
8	Piping for new primary cell	1600	L.F.	$50.00	$80,000.00
9	New Primary Cell Splitter Structure	1	L.S.	$22,000.00	$22,000.00
10	Lagoon Transfer Structure w/inlet & outlet pipe	5	Each	$13,000.00	$65,000.00
11	Lagoon Inlet and Outlet Pipe Concrete Cradle	240	L.F.	$50.00	$12,000.00
12	Lagoon Inlet and Outlet Pipe Cut-off wall	12	Each	$500.00	$6,000.00
13	Chainlink Fence	28000	L.F.	$22.00	$616,000.00
14	Construction Contingency	1	L.S.	$500,100.00	$500,100.00
	TOTAL CONSTRUCTION ESTIMATED COST				**$5,082,000.00**
	R/W, Easements, property survey:				$18,000.00
	City Legal & City Administration:				$80,000.00
	Additional Land Acquisition:	151	acre	$3,500.00	$528,500.00
	Environmental/Permitting:				$60,000.00
	Design Engineering:				$290,000.00
	Construction Engineering:				$190,500.00
	PROJECT TOTAL				**$6,249,000.00**

APPENDIX G

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis
SUMMARY

Discharging Facility: **Ephraim City Lagoons**
UPDES No: UT-None
Current Flow: 1.94 MGD Design Flow
Design Flow 1.94 MGD

Receiving Water: **Ditch => San Pitch**
Stream Classification: 2B, 3C, 3D, 4
Stream Flows [cfs]:

31.6 Winter (Dec-Mar) 20th Percentile Fall & Winter

Stream TDS Values:

929.0 Winter (Dec-Mar) Fall and Winter Average

Effluent Limits:				**WQ Standard:**
Flow, MGD:	1.94	MGD	Design Flow	
BOD, mg/l:	25.0	Winter	5.0	Indicator
Dissolved Oxygen, mg/l	5.0	Winter	5.0	30 Day Average
TNH3, Chronic, mg/l:	21.5	Winter	Varies	Function of pH and Temperature
TDS, mg/l:	1245.1	Winter	1200.0	

Modeling Parameters:
Acute River Width: 50.0%
Chronic River Width: 100.0%

Level II Review required.

Date: 10/1/2012

Permit Writer: _____ _____

WLA by: _____ _____

WQM Sec. Approval: _____ _____

TMDL Sec. Approval: _____ _____

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis

1-Oct-12
4:00 PM

Facilities: **Ephraim City Lagoons**
Discharging to: **Ditch => San Pitch**

UPDES No: UT-None

THIS IS A DRAFT DOCUMENT

I. Introduction

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary in-stream parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), un-ionized ammonia (as a function of pH and temperature, measured and evaluated interms of total ammonia), and dissolved oxygen.

Mathematical water quality modeling is employed to determine stream quality response to point source discharges. Models aid in the effort of anticipating stream quality at future effluent flows at critical environmental conditions (e.g., low stream flow, high temperature, high pH, etc).

The numeric criteria in this wasteload analysis may always be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

II. Receiving Water and Stream Classification

Ditch => San Pitch:	2B, 3C, 3D, 4
Antidegradation Review:	Level I review completed. Level II review required.

III. Numeric Stream Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.00 mg/l (30 Day Average) N/A mg/l (7Day Average) 3.00 mg/l (1 Day Average
Maximum Total Dissolved Solids	1200.0 mg/l

Acute and Chronic Heavy Metals (Dissolved)

Parameter	4 Day Average (Chronic) Standard Concentration	Load*	1 Hour Average (Acute) Standard Concentration		Load*
Aluminum	87.00 ug/l**	1.410 lbs/day	750.00	ug/l	12.156 lbs/day
Arsenic	190.00 ug/l	3.079 lbs/day	340.00	ug/l	5.511 lbs/day
Cadmium	1.05 ug/l	0.017 lbs/day	13.64	ug/l	0.221 lbs/day
Chromium III	384.18 ug/l	6.227 lbs/day	8037.81	ug/l	130.275 lbs/day
ChromiumVI	11.00 ug/l	0.178 lbs/day	16.00	ug/l	0.259 lbs/day
Copper	44.37 ug/l	0.719 lbs/day	78.14	ug/l	1.266 lbs/day
Iron			1000.00	ug/l	16.208 lbs/day
Lead	32.48 ug/l	0.526 lbs/day	833.48	ug/l	13.509 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.039 lbs/day
Nickel	244.28 ug/l	3.959 lbs/day	2197.17	ug/l	35.611 lbs/day
Selenium	4.60 ug/l	0.075 lbs/day	20.00	ug/l	0.324 lbs/day
Silver	N/A ug/l	N/A lbs/day	87.35	ug/l	1.416 lbs/day
Zinc	562.44 ug/l	9.116 lbs/day	562.44	ug/l	9.116 lbs/day

* Allowed below discharge

**Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO3

Metals Standards Based upon a Hardness of 620.29 mg/l as CaCO3

Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard Concentration	Load*	1 Hour Average (Acute) Standard Concentration		Load*
Aldrin			1.500	ug/l	0.024 lbs/day
Chlordane	0.004 ug/l	0.081 lbs/day	1.200	ug/l	0.019 lbs/day
DDT, DDE	0.001 ug/l	0.019 lbs/day	0.550	ug/l	0.009 lbs/day
Dieldrin	0.002 ug/l	0.036 lbs/day	1.250	ug/l	0.020 lbs/day
Endosulfan	0.056 ug/l	1.057 lbs/day	0.110	ug/l	0.002 lbs/day
Endrin	0.002 ug/l	0.043 lbs/day	0.090	ug/l	0.001 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.072 lbs/day	0.260	ug/l	0.004 lbs/day
Lindane	0.080 ug/l	1.510 lbs/day	1.000	ug/l	0.016 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.001 lbs/day
PCB's	0.014 ug/l	0.264 lbs/day	2.000	ug/l	0.032 lbs/day
Pentachlorophenol	13.00 ug/l	245.328 lbs/day	20.000	ug/l	0.324 lbs/day
Toxephene	0.0002 ug/l	0.004 lbs/day	0.7300	ug/l	0.012 lbs/day

IV. Numeric Stream Standards for Protection of Agriculture

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.08 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	9.72 tons/day

V. Numeric Stream Standards for Protection of Human Health (Class 1C Waters)

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
Metals	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day
Chlorophenoxy Herbicides				
2,4-D			ug/l	lbs/day
2,4,5-TP			ug/l	lbs/day
Endrin			ug/l	lbs/day
ocyclohexane (Lindane)			ug/l	lbs/day
Methoxychlor			ug/l	lbs/day
Toxaphene			ug/l	lbs/day

VI. Numeric Stream Standards the Protection of Human Health from Water & Fish Consumption [Toxics]

	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Toxic Organics	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	50.95 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	14.72 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.01 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	1.34 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.08 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	396.30 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	1.87 lbs/day

1,1,1-Trichloroethane					
Hexachloroethane	ug/l	lbs/day	8.9	ug/l	0.17 lbs/day
1,1-Dichloroethane					
1,1,2-Trichloroethane	ug/l	lbs/day	42.0	ug/l	0.79 lbs/day
1,1,2,2-Tetrachloroethan	ug/l	lbs/day	11.0	ug/l	0.21 lbs/day
Chloroethane			0.0	ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4	ug/l	0.03 lbs/day
2-Chloroethyl vinyl ethe	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0	ug/l	81.15 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5	ug/l	0.12 lbs/day
p-Chloro-m-cresol			0.0	ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0	ug/l	8.87 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0	ug/l	7.55 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0	ug/l	320.81 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0	ug/l	49.07 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0	ug/l	49.07 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1	ug/l	0.00 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2	ug/l	0.06 lbs/day
1,2-trans-Dichloroethyle	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0	ug/l	14.91 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0	ug/l	0.74 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0	ug/l	32.08 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0	ug/l	43.40 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1	ug/l	0.17 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5	ug/l	0.01 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0	ug/l	547.27 lbs/day
Fluoranthene	ug/l	lbs/day	370.0	ug/l	6.98 lbs/day
4-Chlorophenyl phenyl ether					
4-Bromophenyl phenyl ether					
Bis(2-chloroisopropyl) e	ug/l	lbs/day	170000.0	ug/l	3208.13 lbs/day
Bis(2-chloroethoxy) met	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Methylene chloride (HM	ug/l	lbs/day	1600.0	ug/l	30.19 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0	ug/l	6.79 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0	ug/l	0.42 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0	ug/l	0.64 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0	ug/l	0.94 lbs/day
Hexachlorocyclopentadi	ug/l	lbs/day	17000.0	ug/l	320.81 lbs/day
Isophorone	ug/l	lbs/day	600.0	ug/l	11.32 lbs/day
Naphthalene					
Nitrobenzene	ug/l	lbs/day	1900.0	ug/l	35.86 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0	ug/l	264.20 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0	ug/l	14.44 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1	ug/l	0.15 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0	ug/l	0.30 lbs/day
N-Nitrosodi-n-propylami	ug/l	lbs/day	1.4	ug/l	0.03 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2	ug/l	0.15 lbs/day

Phenol	ug/l	lbs/day	4.6E+06	ug/l	8.68E+04 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9	ug/l	0.11 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0	ug/l	98.13 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0	ug/l	226.46 lbs/day
Di-n-octyl phthlate					
Diethyl phthalate	ug/l	lbs/day	120000.0	ug/l	2264.56 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06	ug/l	5.47E+04 lbs/day
Benzo(a)anthracene (P	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Benzo(b)fluoranthene (	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Benzo(k)fluoranthene (P	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Acenaphthylene (PAH)					
Anthracene (PAH)	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0	ug/l	207.58 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9	ug/l	0.17 lbs/day
Toluene	ug/l	lbs/day	200000	ug/l	3774.27 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0	ug/l	1.53 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0	ug/l	9.91 lbs/day
					lbs/day
Pesticides					lbs/day
Aldrin	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2.0	ug/l	0.04 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0	ug/l	0.04 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0	ug/l	0.04 lbs/day
Endrin	ug/l	lbs/day	0.8	ug/l	0.02 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8	ug/l	0.02 lbs/day
Heptachlor	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Heptachlor epoxide					
PCB's					
PCB 1242 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1254 (Arochlor 125	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1221 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1232 (Arochlor 123	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1248 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1260 (Arochlor 126	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
PCB-1016 (Arochlor 10	ug/l	lbs/day	0.0	ug/l	0.00 lbs/day
Pesticide					
Toxaphene	ug/l		0.0	ug/l	0.00 lbs/day
Dioxin					
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day			

Metals				
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	81.15 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	4151.70 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	86.81 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.12 lbs/day
Zinc				

There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.

VII. Mathematical Modeling of Stream Quality

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8

(4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

Coefficients used in the model were based, in part, upon the following references:

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

VIII. Modeling Information

The required information for the model may include the following information for both the upstream conditions at low flow and the effluent conditions:

Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

Other Conditions

In addition to the upstream and effluent conditions, the models require a variety of physical and biological coefficients and other technical information. In the process of actually establishing the permit limits for an effluent, values are used based upon the available data, model calibration, literature values, site visits and best professional judgement.

Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

Current Upstream Information

	Stream Critical Low Flow cfs	Temp. Deg. C	pH	T-NH3 mg/l as N	BOD5 mg/l	DO mg/l	TRC mg/l	TDS mg/l
Summer (Irrig. Season)	0.50	21.5	8.3	0.00	0.00	6.45	0.00	1299.0
Fall	0.70	6.8	8.2	0.07	0.00	---	0.00	983.0
Winter	31.60	3.0	8.3	0.10	0.10	---	0.00	929.0
Spring	2.90	17.2	8.3	0.10	0.00	---	0.00	1338.0

Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*

Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l	
All Seasons	0.0000	0.53*	1.06*	0.1*	0.053*	10.0	* 1/2 MDL

Projected Discharge Information

Season	Flow, MGD	Temp.
Winter (Dec-Mar)	1.94000	4.0

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

IX. Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort coincide with the environmental conditions expected at low stream flows.

Effluent Limitation for Flow based upon Water Quality Standards

In-stream criteria of downstream segments will be met with an effluent flow maximum value as follows:

Season	Daily Average	
Winter	1.940 MGD	3.001 cfs

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of MGD. If the discharger is allowed to have a flow greater than MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occuring, the permit writers must include the discharge flow limititation as indicated above; or, include loading effluent limits in the permit.

Effluent Limitation for Whole Effluent Toxicity (WET) based upon WET Policy

Effluent Toxicity will not occur in downstream segements if the values below are met.

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	85.7% Effluent	[Chronic]

Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD limitation as follows:

Season	Concentration	
Summer	25.0 mg/l as BOD5	0.0 lbs/day
Fall	25.0 mg/l as BOD5	0.0 lbs/day
Winter	25.0 mg/l as BOD5	0.0 lbs/day
Spring	25.0 mg/l as BOD5	0.0 lbs/day

Effluent Limitation for Dissolved Oxygen (DO) based upon Water Quality Standards

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent D.O. limitation as follows:

Season	**Concentration**
Winter	5.00

Effluent Limitation for Total Ammonia based upon Water Quality Standards

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

Season		**Concentration**		**Load**	
Winter (Dec-Mar)	4 Day Avg. - Chronic	15.2	mg/l as N	246.0	lbs/day
	1 Hour Avg. - Acute	39.9	mg/l as N	645.1	lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

Effluent Limitation for Total Residual Chlorine based upon Water Quality Standards

In-stream criteria of downstream segments for Total Residual Chlorine will be met with an effluent limitation as follows:

Season		Concentration		Load	
Winter (Dec - Mar)	4 Day Avg. - Chronic	0.116	mg/l	1.88	lbs/day
	1 Hour Avg. - Acute	0.219	mg/l	3.54	lbs/day

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration		Load	
Winter (Dec - Mar)	Maximum, Acute	1245.1	mg/l	10.07	tons/day
Colorado Salinity Forum Limits		Determined by Permitting Section			

Effluent Limitations for Total Recoverable Metals based upon Water Quality Standards

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 620.29 mg/l):

	4 Day Average Concentration		Load	1 Hour Average Concentration		Load
Aluminum*	N/A		N/A	874.6	ug/l	14.2 lbs/day
Arsenic*	221.52	ug/l	2.3 lbs/day	396.5	ug/l	6.4 lbs/day
Cadmium	1.21	ug/l	0.0 lbs/day	15.9	ug/l	0.3 lbs/day
Chromium III	448.05	ug/l	4.7 lbs/day	9,376.8	ug/l	152.0 lbs/day
Chromium VI*	12.17	ug/l	0.1 lbs/day	18.0	ug/l	0.3 lbs/day
Copper	51.63	ug/l	0.5 lbs/day	91.0	ug/l	1.5 lbs/day
Iron*	N/A		N/A	1,166.4	ug/l	18.9 lbs/day
Lead	37.76	ug/l	0.4 lbs/day	972.2	ug/l	15.8 lbs/day
Mercury*	0.01	ug/l	0.0 lbs/day	2.8	ug/l	0.0 lbs/day
Nickel	284.85	ug/l	3.0 lbs/day	2,563.1	ug/l	41.5 lbs/day
Selenium*	5.10	ug/l	0.1 lbs/day	23.1	ug/l	0.4 lbs/day
Silver	N/A	ug/l	N/A lbs/day	101.9	ug/l	1.7 lbs/day
Zinc	656.13	ug/l	6.9 lbs/day	656.1	ug/l	10.6 lbs/day
Cyanide*	6.07	ug/l	0.1 lbs/day	25.7	ug/l	0.4 lbs/day

*Limits for these metals are based on the dissolved standard.

Effluent Limitations for Heat/Temperature based upon Water Quality Standards

Summer	23.8 Deg. C.	74.9 Deg. F
Fall	9.3 Deg. C.	48.7 Deg. F
Winter	26.1 Deg. C.	78.9 Deg. F
Spring	21.1 Deg. C.	70.0 Deg. F

Effluent Limitations for Organics [Pesticides] Based upon Water Quality Standards

In-stream criteria of downstream segments for Organics [Pesticides] will be met with an effluent limit as follows:

	4 Day Average Concentration	Load	1 Hour Average Concentration		Load
Aldrin			1.5E+00	ug/l	3.76E-02 lbs/day
Chlordane	4.30E-03 ug/l	6.96E-02 lbs/day	1.2E+00	ug/l	3.01E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	1.62E-02 lbs/day	5.5E-01	ug/l	1.38E-02 lbs/day
Dieldrin	1.90E-03 ug/l	3.07E-02 lbs/day	1.3E+00	ug/l	3.13E-02 lbs/day
Endosulfan	5.60E-02 ug/l	9.06E-01 lbs/day	1.1E-01	ug/l	2.76E-03 lbs/day
Endrin	2.30E-03 ug/l	3.72E-02 lbs/day	9.0E-02	ug/l	2.26E-03 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	2.51E-04 lbs/day
Heptachlor	3.80E-03 ug/l	6.15E-02 lbs/day	2.6E-01	ug/l	6.52E-03 lbs/day
Lindane	8.00E-02 ug/l	1.29E+00 lbs/day	1.0E+00	ug/l	2.51E-02 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	7.52E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	2.51E-04 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	1.00E-03 lbs/day
PCB's	1.40E-02 ug/l	2.26E-01 lbs/day	2.0E+00	ug/l	5.01E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	2.10E+02 lbs/day	2.0E+01	ug/l	5.01E-01 lbs/day
Toxephene	2.00E-04 ug/l	3.24E-03 lbs/day	7.3E-01	ug/l	1.83E-02 lbs/day

Effluent Targets for Pollution Indicators
Based upon Water Quality Standards

In-stream criteria of downstream segments for Pollution Indicators will be met with an effluent limit as follows:

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	81.0 lbs/day
Nitrates as N	4.0 mg/l	64.8 lbs/day
Total Phosphorus as P	0.05 mg/l	0.8 lbs/day
Total Suspended Solids	90.0 mg/l	1458.7 lbs/day

Note: Pollution indicator targets are for information purposes only.

Effluent Limitations for Protection of Human Health [Toxics Rule]
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

	Maximum Concentration	
	Concentration	Load
Toxic Organics		
Acenaphthene	3.15E+03 ug/l	0.00E+00 lbs/day
Acrolein	9.10E+02 ug/l	0.00E+00 lbs/day
Acrylonitrile	7.70E-01 ug/l	0.00E+00 lbs/day
Benzene	8.28E+01 ug/l	0.00E+00 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	5.13E+00 ug/l	0.00E+00 lbs/day
Chlorobenzene	2.45E+04 ug/l	0.00E+00 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	8.98E-04 ug/l	0.00E+00 lbs/day
1,2-Dichloroethane	1.15E+02 ug/l	0.00E+00 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.04E+01 ug/l	0.00E+00 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	4.90E+01 ug/l	0.00E+00 lbs/day
1,1,2,2-Tetrachloroethane	1.28E+01 ug/l	0.00E+00 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.63E+00 ug/l	0.00E+00 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	5.02E+03 ug/l	0.00E+00 lbs/day
2,4,6-Trichlorophenol	7.58E+00 ug/l	0.00E+00 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	5.48E+02 ug/l	0.00E+00 lbs/day
2-Chlorophenol	4.67E+02 ug/l	0.00E+00 lbs/day
1,2-Dichlorobenzene	1.98E+04 ug/l	0.00E+00 lbs/day
1,3-Dichlorobenzene	3.03E+03 ug/l	0.00E+00 lbs/day

1,4-Dichlorobenzene	3.03E+03 ug/l	0.00E+00 lbs/day
3,3'-Dichlorobenzidine	8.98E-02 ug/l	0.00E+00 lbs/day
1,1-Dichloroethylene	3.73E+00 ug/l	0.00E+00 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	9.22E+02 ug/l	0.00E+00 lbs/day
1,2-Dichloropropane	4.55E+01 ug/l	0.00E+00 lbs/day
1,3-Dichloropropylene	1.98E+03 ug/l	0.00E+00 lbs/day
2,4-Dimethylphenol	2.68E+03 ug/l	0.00E+00 lbs/day
2,4-Dinitrotoluene	1.06E+01 ug/l	0.00E+00 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	6.30E-01 ug/l	0.00E+00 lbs/day
Ethylbenzene	3.38E+04 ug/l	0.00E+00 lbs/day
Fluoranthene	4.32E+02 ug/l	0.00E+00 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.98E+05 ug/l	0.00E+00 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	1.87E+03 ug/l	0.00E+00 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	4.20E+02 ug/l	0.00E+00 lbs/day
Dichlorobromomethane(HM)	2.57E+01 ug/l	0.00E+00 lbs/day
Chlorodibromomethane (HM)	3.97E+01 ug/l	0.00E+00 lbs/day
Hexachlorocyclopentadiene	1.98E+04 ug/l	0.00E+00 lbs/day
Isophorone	7.00E+02 ug/l	0.00E+00 lbs/day
Naphthalene		
Nitrobenzene	2.22E+03 ug/l	0.00E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	1.63E+04 ug/l	0.00E+00 lbs/day
4,6-Dinitro-o-cresol	8.92E+02 ug/l	0.00E+00 lbs/day
N-Nitrosodimethylamine	9.45E+00 ug/l	0.00E+00 lbs/day
N-Nitrosodiphenylamine	1.87E+01 ug/l	0.00E+00 lbs/day
N-Nitrosodi-n-propylamine	1.63E+00 ug/l	0.00E+00 lbs/day
Pentachlorophenol	9.57E+00 ug/l	0.00E+00 lbs/day
Phenol	5.37E+06 ug/l	0.00E+00 lbs/day
Bis(2-ethylhexyl)phthalate	6.88E+00 ug/l	0.00E+00 lbs/day
Butyl benzyl phthalate	6.07E+03 ug/l	0.00E+00 lbs/day
Di-n-butyl phthalate	1.40E+04 ug/l	0.00E+00 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.40E+05 ug/l	0.00E+00 lbs/day
Dimethyl phthlate	3.38E+06 ug/l	0.00E+00 lbs/day
Benzo(a)anthracene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Benzo(a)pyrene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Benzo(b)fluoranthene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Benzo(k)fluoranthene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Chrysene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	3.62E-02 ug/l	0.00E+00 lbs/day

Pyrene (PAH)	1.28E+04 ug/l	0.00E+00 lbs/day
Tetrachloroethylene	1.04E+01 ug/l	0.00E+00 lbs/day
Toluene	2.33E+05 ug/l	0.00E+00 lbs/day
Trichloroethylene	9.45E+01 ug/l	0.00E+00 lbs/day
Vinyl chloride	6.12E+02 ug/l	0.00E+00 lbs/day
Pesticides		
Aldrin	1.63E-04 ug/l	0.00E+00 lbs/day
Dieldrin	1.63E-04 ug/l	0.00E+00 lbs/day
Chlordane	6.88E-04 ug/l	0.00E+00 lbs/day
4,4'-DDT	6.88E-04 ug/l	0.00E+00 lbs/day
4,4'-DDE	6.88E-04 ug/l	0.00E+00 lbs/day
4,4'-DDD	9.80E-04 ug/l	0.00E+00 lbs/day
alpha-Endosulfan	2.33E+00 ug/l	0.00E+00 lbs/day
beta-Endosulfan	2.33E+00 ug/l	0.00E+00 lbs/day
Endosulfan sulfate	2.33E+00 ug/l	0.00E+00 lbs/day
Endrin	9.45E-01 ug/l	0.00E+00 lbs/day
Endrin aldehyde	9.45E-01 ug/l	0.00E+00 lbs/day
Heptachlor	2.45E-04 ug/l	0.00E+00 lbs/day
Heptachlor epoxide		
PCB's		
PCB 1242 (Arochlor 1242)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1254 (Arochlor 1254)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1221 (Arochlor 1221)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1232 (Arochlor 1232)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1248 (Arochlor 1248)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1260 (Arochlor 1260)	5.25E-05 ug/l	0.00E+00 lbs/day
PCB-1016 (Arochlor 1016)	5.25E-05 ug/l	0.00E+00 lbs/day
Pesticide		
Toxaphene	8.75E-04 ug/l	0.00E+00 lbs/day
Metals		
Antimony	ug/l	lbs/day
Arsenic	ug/l	lbs/day
Asbestos	ug/l	lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	ug/l	lbs/day
Cyanide	ug/l	lbs/day
Lead		
Mercury	ug/l	lbs/day
Nickel	ug/l	lbs/day
Selenium		
Silver		
Thallium	ug/l	lbs/day
Zinc		

Dioxin

Dioxin (2,3,7,8-TCDD)	1.63E-08 ug/l	0.00E+00 lbs/day

Metals Effluent Limitations for Protection of All Beneficial Uses Based upon Water Quality Standards and Toxics Rule

	Class 4 Acute Agricultural ug/l	Class 3 Acute Aquatic Wildlife ug/l	Acute Toxics Drinking Water Source ug/l	Acute Toxics Wildlife ug/l	1C Acute Health Criteria ug/l	Acute Most Stringent ug/l	Class 3 Chronic Aquatic Wildlife ug/l
Aluminum		874.6				874.6	N/A
Antimony				5016.4		5016.4	
Arsenic	116.7	396.5			0.0	116.7	221.5
Barium						0.0	
Beryllium						0.0	
Cadmium	11.7	15.9			0.0	11.7	1.2
Chromium (III)		9376.8			0.0	9376.8	448.1
Chromium (VI)	116.5	18.0			0.0	18.00	12.17
Copper	233.2	91.0				91.0	51.6
Cyanide		25.7	256652.3			25.7	6.1
Iron		1166.4				1166.4	
Lead	116.5	972.2			0.0	116.5	37.8
Mercury		2.80		0.17	0.0	0.17	0.014
Nickel		2563.1		5366.4		2563.1	284.8
Selenium	58.1	23.1			0.0	23.1	5.1
Silver		101.9			0.0	101.9	
Thallium				7.3		7.3	
Zinc		656.1				656.1	656.1
Boron	875.0					875.0	

Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]

[If Acute is more stringent than Chronic, then the Chronic takes on the Acute value.]

	WLA Acute ug/l	WLA Chronic ug/l	
Aluminum	874.6	N/A	
Antimony	5016.38		
Arsenic	116.7	221.5	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	11.7	1.2	
Chromium (III)	9376.8	448	
Chromium (VI)	18.0	12.2	
Copper	91.0	51.6	

Cyanide	25.7	6.1
Iron	1166.4	
Lead	116.5	37.8
Mercury	0.175	0.014
Nickel	2563.1	285
Selenium	23.1	5.1
Silver	101.9	N/A
Thallium	7.3	
Zinc	656.1	656.1
Boron	874.95	

Other Effluent Limitations are based upon R317-1.

E. coli	126.0	organisms per 100 ml

X. Antidegradation Considerations

The Utah Antidegradation Policy allows for degradation of existing quality where it is determined that such lowering of water quality is necessary to accommodate important economic or social development in the area in which the waters are protected [R317-2-3]. It has been determined that certain chemical parameters introduced by this discharge will cause an increase of the concentration of said parameters in the receiving waters. Under no conditions will the increase in concentration be allowed to interfere with existing instream water uses.

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is required.

XI. Colorado River Salinity Forum Considerations

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value.

XII. Summary Comments

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

XIII. Notice of UPDES Requirement

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information.

Permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations provided that the values in this wasteload analysis [TMDL] are not compromised. See special provisions in Utah Water Quality Standards for adjustments in the Total Dissolved Solids values based upon background concentration.

Antidegredation Review

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that the proposed discharge will require a Level II Antidegradation Review.

FILE COPY

Industrial Pretreatment Wastewater Survey

Do you periodically experience any of the following treatment works problems:

foam, floaties or unusual colors
plugged collection lines caused by grease, sand, flour, etc.
discharging excessive suspended solids, even in the winter
smells unusually bad
waste treatment facility doesn't seem to be treating the waste right

Perhaps the solution to a problem like one of these may lie in investigating the types and amounts of wastewater entering the sewer system from industrial users.

An industrial user (IU) is defined as a non-domestic user discharging to the waste treatment facility which meets any of the following criteria:

1. **has a lot of process wastewater (5% of the flow at the waste treatment facility or more than 25,000 gallons per work day.)**

   Examples: Food processor, dairy, slaughterhouse, industrial laundry.

2. **is subject to Federal Categorical Pretreatment Standards;**

   Examples: metal plating, cleaning or coating of metals, blueing of metals, aluminum extruding, circuit board manufacturing, tanning animal skins, pesticide formulating or packaging, and pharmaceutical manufacturing or packaging,

3. **is a concern to the POTW.**

   Examples: septage hauler, restaurant and food service, car wash, hospital, photo lab, carpet cleaner, commercial laundry.

All users of the water treatment facility are **prohibited** from making the following types of discharges:

1. A discharge which creates a fire or explosion hazard in the collection system.

2. A discharge which creates toxic gases, vapor or fumes in the collection system.

3. A discharge of solids or thick liquids which creates flow obstructions in the collection system.

4. An acidic discharge (low pH) which causes corrosive damage to the collection system.

5. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause problems in the collection system or at the waste treatment facility.

6. Waste haulers are prohibited from discharging without permission. (No midnight dumping!)

When the solution to a sewer system problem may be found by investigating the types and amounts of wastewater entering the sewer system discharged from IUs, it's appropriate to conduct an Industrial Waste Survey.

An Industrial Waste Survey consists of:

Step 1: Identify Industrial Users

Make a list of all the commercial and industrial sewer connections.

Sources for the list:

business license, building permits, water and wastewater billing, Chamber of Commerce, newspaper, telephone book, yellow pages.

Split the list into two groups:

domestic wastewater only--no further information needed
everyone else (IUs)

Step 2: Preliminary Inspection

Go visit each IU identified on the "everybody else" list.

Fill out the **Preliminary Inspection Form** during the site visit.

Step 3: Informing the State

Please fax or send a copy of the Preliminary inspection form (both sides) to:

Jennifer Robinson

Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, UT 84114-4870

Phone: (801) 536-4383
Fax: (801) 536-4301
E-mail: jenrobinson@utah.gov

PRELIMINARY INSPECTION FORM

INSPECTION DATE ___ / ____ /

Name of Business **Person Contacted** _____
Address _____ **Phone Number** _____
_____

Description of Business _____

Principal product or service: _____

Raw Materials used: _____
_____

Production process is: [ ] Batch [ ] Continuous [ ] Both

Is production subject to seasonal variation? [ ] yes [ ] no
If yes, briefly describe seasonal production cycle.

_____

This facility generates the following types of wastes (check all that apply):

1. [ ] Domestic wastes (Restrooms, employee showers, etc.)
2. [ ] Cooling water, non-contact
3. [ ] Boiler/Tower blowdown
4. [ ] Cooling water, contact
5. [ ] Process
6. [ ] Equipment/Facility washdown
7. [ ] Air Pollution Control Unit
8. [ ] Storm water runoff to sewer
9. [ ] Other describe

Wastes are discharged to (check all that apply):

[ ] Sanitary sewer
[ ] Storm sewer
[ ] Surface water
[ ] Ground water
[ ] Waste haulers
[ ] Evaporation
[ ] Other (describe)
Name of waste hauler(s), if used

_____

Is a grease trap installed? Yes No
Is it operational? Yes No

Does the business discharge a lot of process wastewater?

- **More than 5% of the flow to the waste treatment facility? Yes No**
- **More than 25,000 gallons per work day? Yes No**

Does the business do any of the following:

[ ] Adhesives
[ ] Aluminum Forming
[ ] Battery Manufacturing
[ ] Copper Forming
[ ] Electric & Electronic Components
[ ] Explosives Manufacturing
[ ] Foundries
[ ] Inorganic Chemicals Mfg. or Packaging
[ ] Industrial Porcelain Ceramic Manufacturing
[ ] Iron & Steel
[ ] Metal Finishing, Coating or Cleaning
[ ] Mining
[ ] Nonferrous Metals Manufacturing
[ ] Organic Chemicals Manufacturing or Packaging
[ ] Paint & Ink Manufacturing
[ ] Pesticides Formulating or Packaging
[ ] Petroleum Refining
[ ] Pharmaceuticals Manufacturing or Packaging
[ ] Plastics Manufacturing
[ ] Rubber Manufacturing
[ ] Soaps & Detergents Manufacturing
[ ] Steam Electric Generation
[ ] Tanning Animal Skins
[ ] Textile Mills

[ ] Car Wash
[ ] Carpet Cleaner
[ ] Dairy
[ ] Food Processor
[ ] Hospital
[ ] Laundries
[ ] Photo Lab
[ ] Restaurant & Food Service
[ ] Septage Hauler
[ ] Slaughter House

Are any process changes or expansions planned during the next three years? Yes No
If yes, attach a separate sheet to this form describing the nature of planned changes or expansions.

_____
Inspector

_____
Waste Treatment Facility

Please send a copy of the preliminary inspection form (both sides) to:

Jennifer Robinson
Division of Water Quality
P. O. Box 144870
Salt Lake City, Utah 84114-4870

Phone: (801) 536-4383
Fax: (801) 536-4301
E-Mail: jenrobinson@utah.gov

	Industrial User	Jurisdiction	SIC Codes	Categorical Standard Number	Total Average Process Flow (gpd)	Total Average Facility Flow (gpd)	Facility Description
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

PERMIT DEVELOPMENT LOG SHEET

FILE COPY

Permittee Name: **Ephraim City Lagoons**

Permit Number: **UT0025984**

Program/ Process Review	Representative	Date Received / Reviewed
Pretreatment	Jen R. by eDocs	4-Feb / 6-Feb
Storm Water	Mike g. by eDocs	4-Feb /
Biosolids	Mark S. by eDocs	4-Feb /
Whole Effluent Toxicity	Mike H. by eDocs	4-Feb / 6-Feb
Colorado River Salinity	NA	/
TMDL	Scott D. by eDocs	4-Feb / 6-Feb
WLA		4-Jan /
NMP (CAFO)	NA	/
Supervisor Review	John K. by eDocs	14-Feb / 5-Mar
Branch Manager Review	John W. by eDocs	6-Mar / 7-Mar
Permittee	Bryan Kimball by email	9-Feb / 4-Mar
EPA Review (MAJOR)	na	/
Public Notice	Sanpete Messanger	11-Mar / 11-Apr
Public Notice Comments	Comments Received: ☐ Yes ☑ No	Response Sent Out: /
Permit Final Issuance (WITH FEE)		/
Permit Final Issuance (WITHOUT FEE)		/

Please fill in the appropriate Dates for the following (If not applicable enter NA):

Application Received: **10/1/2012**

Application Complete: **11/23/2012**

Permit Public Noticed: **3/11/2012**

Permit Appealed: **NA**

Permit Issued:

Permit Effective Date: **7/1/2013**

Permit Expiration Date: **NA**

Public Notice for Hearing: **NA**

Public Hearing: **NA**

DMR's Coded:

DMR's Mailed: